

# THE IRON AGE

New York, April 17, 1924

ESTABLISHED 1855

VOL. 113, No. 16

## Principles in Cast Iron Flask Design

Application to Jarring Machine Work on Gray Iron  
—General Rules as to Bars—Core Weights  
and Supports—Internal Strains

BY HERMAN COHEN\*

**I**N making up estimates on the cost of castings, the cost of making or adapting flasks, if not the entire question of flasks, is very often neglected.

In contrast with this, the cost of jigs and fixtures for the machine shop is almost always taken into consideration on estimates for machine work. The engineering department usually designs the jigs and fixtures required and very often high officials of the company, as well as the superintendent, pass upon the design before manufacture.

The investment in flasks for the foundry may equal or exceed that in jigs and fixtures for the machine shop and in figuring the cost of castings at all closely, the cost of making or adapting flasks may actually wipe out an apparent profit. Flasks in the ordinary foundry are not only often neglected by the supervisory, estimating and engineering forces, but the entire matter is frequently left by foundry foremen to the haphazard judgment of a pattern-maker or foundry carpenter.

### Gray Iron Jarring Machine Work

It is the purpose of these few lines to set forth a few of the principles that govern the design of flasks, with particular reference to jarring machine work in gray iron. Although the greater part of the advice must of necessity be of a negative nature, conditions being so variable, the writer hopes that it will lead to closer cooperation on the part of the management and engineering department with the foundry. He also believes that few foundry foremen will object to specific improvements which may be pointed out or to information on the upward thrust of cores and copes, their common aversion to "book knowledge" to the contrary.

In making flasks, it is a comparatively easy matter

for the engineering department to make an outline sketch of the piece to be cast, with allowance for prints and shrinkage, approximately locate the gates and risers, and space the bars to suit. By making the flask layout on tracing paper, it is possible to see easily what clearance other pieces similar in size or shape will have, and make such changes in the outline of the flask or arrangement of the bars as may seem desirable, with a minimum of wasted time and effort. Even should the piece to be cast be rather complicated, it is much easier to sketch or detail bars on paper rather than have a patternmaker work on a cut-and-try method.

### Need for Special Flasks

In a gray iron shop, where medium-sized or fairly heavy green sand work is handled, the number of pieces of any one size or article to be cast may warrant special flasks and it is possible, with a little thought, to lay out flasks which will accommodate several different sizes or articles of similar shape. Also, by paying attention to the design of the pattern and core-box of the piece to be cast, it is possible very often to obviate the necessity of gaggers, anchors or chaplets and, in some cases, to make the core in such a form as to be readily located in the mold without the necessity of the molder having to gage the metal of the casting with a rule.

In considering a flask, so far as green sand work is concerned, the sand in the cope may be considered as arching over the pattern, the sides of the flask, in the smaller sizes, acting as skew-backs of the arch. In the larger flasks, bars and cross-bars may be required in the cope to prevent long unsupported spans, take care of any over-hanging pockets of sand, and support the core. The drag may or may not be barred, depending on conditions, such as support for the core, etc.

A flask may be cast with the bars integral with the

\*33 South Madison Avenue, Allentown, Pa.

*THE author has had considerable experience as a mechanical engineer with a large iron foundry and has had supervision over the construction of patterns, flasks, etc., in rigging up molding machines for production on light and medium weight work. He emphasizes that little has been written about flasks, although highly important to both large and small shops. He holds that in small jobbing shops, particularly, they are always adapted to the exigencies of the moment, but where medium sized and fairly heavy work is handled, and where cast iron flasks are used, close supervision over the construction of both the pattern of the piece to be cast and the flasks should prove worth while. Supervision over the weighting of flasks in casting heavy pieces will eliminate the loss due to rising of the cores.*

frame, or the frame may be cast separate and the bars bolted or wedged in (or riveted, in the case of steel flasks), or the flask may have bolted sides with the bars attached as in the previous case. The flask with the bars cast integral is, in a great many cases, if the number of castings to be made warrant the expenditure, the one most desirable for use on a jarring machine.

In laying out a flask, the first thing to consider is the arrangement of the pattern or patterns inside the flask. In making the arrangement, sufficient sand must be allowed between the flask and the pattern, and the method of gating decided upon. This, of course, will depend on conditions. If the pattern is symmetrical about any center line, it will be desirable to have the flask symmetrical about the same center line, and the pins and trunnions (if the flask be large enough) should, if possible, also be symmetrical about the same center line.

It is desirable to leave space for a sand cleat at the joint. The sand cleat should, if possible, follow the contour of the pattern, and, while it is impossible to give any set dimension, a clearance of three-quarters of an inch from the pattern is probably the minimum that will give good results on light work. The cleat should have, if possible, a minimum projection of three-quarters of an inch from the inside of the flask, and be tapered from the inside of the flask to the tip, the tip being slightly rounded to avoid a knife edge and consequent easy breakage.

#### Sides and Height of Flasks

The sides of the flask in the smaller sizes may be straight, with lugs projecting for clamps and pins, and handle bars provided. On the larger flasks, a channel shaped section is desirable, with trunnions projecting beyond the flanges of the channel for handling by mechanical means.

With regard to height, the flask should be high enough so that there will be enough metal in the risers to feed the castings. If the piece to be cast is rather light in section, two and a half inches of sand above the highest point of the pattern is probably a minimum, and the height above the pattern should be greater if the top of the casting has a flat surface. If it is desired to cut the height of the cope to the minimum while a greater height is desired for the gate and risers, runner boxes and iron rings may be used, although these should be avoided on production work.

In regard to locating gates and risers, the location and number will, of course, depend on conditions. It is desirable, as a general rule, that the risers be located on the highest points of a casting. While generally of circular section, this is not essential; oval, square (with rounded corners) or other sections can be used if necessary to secure desirable results. If the size and shape of the gates and risers are to be specified, it may not be amiss to show a rather sharp contraction in section a very short distance from the casting; this is an old trick of the molder to make certain that the metal of the casting will not be broken away when knocking off the gates and risers.

#### General Rules as to Bars for Flasks

A few general rules may be given in regard to bars in a flask and, while these have particular reference to cast iron bars in flasks used on jarring machines, they nevertheless are applicable to other conditions:

A bar should have sufficient clearance over the pattern to allow the sand to pack uniformly around the pattern. Three-quarters of an inch is a good clearance on light and medium sized work, but the distance can if necessary, be increased considerably without any difficulty arising.

The bar, if at all possible, should be chamfered on both sides at the bottom to allow the sand to pack beneath it. It is not necessary to taper it to a knife edge; a rounded edge gives good results. The taper, if necessary, may be placed on one side of the bar, although the bar with both sides chamfered is preferable.

Where the pattern has a steep side, as in the case of a flange, a bar running parallel to the side should be offset far enough to allow the sand to pack

well between the bar and the pattern. If the depth be not excessive, a clearance of one inch between the pattern and side of the bar is probably the minimum.

In regard to the spacing of bars, no set rules can be given, this depending on the span, depth, shape of pattern, etc., but, as a general rule, it may be stated that the greater the depth of sand, the greater may be the space between bars. It should always be borne in mind that the chief purpose of bars is to provide skew-backs on which the sand may arch over the pattern. A minimum distance, unless other considerations enter into the matter, is 4 to 5 in., and this would be sufficient for a very shallow cope.

Overhanging bars which act as cantilevers should be avoided wherever possible and, if used, the overhang should be cut down as much as possible.

The bars should be rugged, in proportion to the flask, and, where loose bars are used, they should be firmly fastened in place.

#### Clearance Required for Prints

In regard to the clearance required for prints, the chief object of a print on a pattern is to provide means for supporting the core.

What is probably the most important consideration regarding the length of print, if the core is to be supported entirely by the mold, is the upward thrust of the core during and after the pouring of the metal, and before the metal has solidified. This should be considered from two angles.

In the first case, which occurs during the pouring of the casting and before the mold is entirely filled, the core may be considered as a plunger which is subjected to an upward thrust by the metal, depending on the height of the metal in the gates, after the well-known lines of the hydrostatic paradox. The upward thrust of the core due to this effect may be figured by multiplying the greatest projected area of the core exposed to the action of the metal, by the pressure head of the metal at the height from which the area is taken. In the case of a hollow cylinder cast in a horizontal position, the greatest area will be at the center, which is usually the parting, and the effective pressure head will be the height of the cope and runner-box, if one is used.

For gray iron, the approximate pressure in pounds per square inch will be this height in inches multiplied by 0.26, the weight of a cubic inch of iron figured on a basis of 450 lb. per cu. ft. The net upward thrust due to this effect when the metal has reached a particular level will be the total pressure figured as above, less the weight of the core.

The core will also be subjected to an upward thrust after the mold has been filled and until the metal has solidified, due to its buoyancy. In gray iron, the core, the weight of which is approximately 90 lb. per cu. ft., is immersed in a liquid which weighs approximately 450 lb. per cu. ft. The net upward thrust due to the buoyancy of the core will be the difference between the weight of the core and the weight of an equal volume of the metal, or approximately 360 lb. per cu. ft.

Whether the upward thrust due to the plunger action of the metal against the core will be greater than that due to the buoyancy of the core, will depend on conditions. On large castings, the upward thrust is tremendous and the extreme case should be provided for. If the core be heavy in proportion to the casting, the chief factor may be the area required to support the core in the drag.

#### Weight of Cores

A fairly close estimate may be made of the weight of a core, baked core sand weighing in the neighborhood of 90 lb. per cu. ft., and allowance can easily be made for the rods that are necessary.

Regarding the bearing value of a mold, this will vary considerably, but 2 lb. per sq. in. of projected bearing area is probably a safe figure to use even on a mold that is very soft, if there are no sharp corners which may act as wedges. In considering the bearing area, the projected area should be taken and allowance made for shaving the mold to avoid crushing and for the difference between the length of print and length of core.

If the casting be of any size at all, it will be readily seen that the length of print required properly to sup-



port the core will be excessive, and in these cases provision for supporting the core will have to be made by locating one or more bars over each print, by having the core extend through the ends or sides of the flask, or by anchors and weights.

If the flask has a machined joint at the parting and will be used only for the one side of pattern, the bar or side of the flask may rest directly on the print. If such is not the case, such clearance as is desired may be allowed and an adjustable stop provided, or a wedge or chaplet may be inserted between the bar and the

located here. In the former case, it should be borne in mind that this portion of the core has to support half the thrust of each elbow, and any allowance made for shaving the mold to avoid crushing should be deducted from the bearing area.

One other matter should be considered in making allowance for prints in a flask. Many castings have a reducing section, a seat or shoulder, the metal of which may be altered by shifting the core in a longitudinal direction. If the core be made with straight ends, the molder or foreman has to gage the metal with a rule.

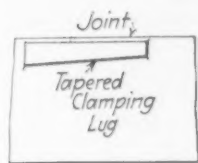


Fig. 1



Fig. 2

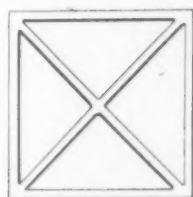


Fig. 4A



Fig. 4B

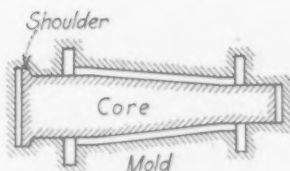


Fig. 5

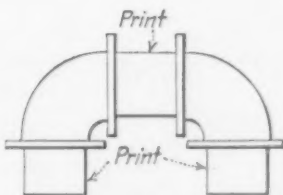


Fig. 6

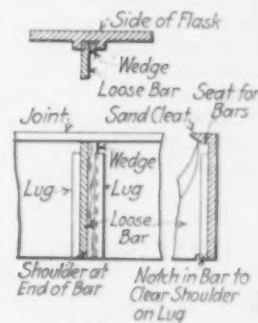


Fig. 3

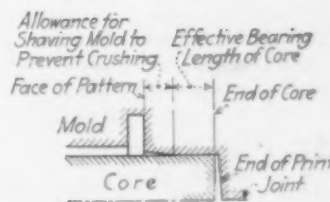


Fig. 7

Fig. 1—Typical Section of Flask with Straight Sides Showing Sand Cleat and Tapered Clamping Lug. Fig. 2—Typical section of flask with channel section sides showing sand cleat, tapered clamping lug and bar with chamfered edge. Fig. 3—Method of attaching loose bars. Flask is cast with lugs as shown. One lug has flat side, against which bar is wedged, and shoulder at end which prevents bar from dropping out. Other lug has tapered side to hold wedge in place. Distance between lugs sufficient to allow bar to slip past shoulder. Bar notched to clear shoulder. Sand cleat provided with seat for bar. Fig. 4-A—Flask with bars so arranged as to act as struts, preventing shrinkage in frame of flask or bars. Fig. 4-B—Flask with corners cut. When shrinkage takes place, sides of flask may deflect around corners. Note absence of heavy section of metal at corners. Breakage most commonly occurs at junction of light and heavy section of metal. Fig. 5—Shoulder on core of flanged pipe reducer to locate core and prevent shifting in longitudinal direction. Shoulder also acts as a seal in preventing runouts. Fig. 6—Arrangement of flanged 90-deg. elbows to eliminate anchors or chaplets for supporting core. Fig. 7—In figuring bearing value of mold, allowance should be made for shaving of mold and difference between lengths of print and core

print, these wedges or chaplets being rammed up in the mold and recovered when the flask is shaken out.

#### Supports for Cores

The support for the cores should be given a little attention in arranging the patterns in the flask, if more than one pattern is placed in a flask. An example of what can be gained by paying attention to the arrangement of patterns in a flask may be illustrated by flanged 90-deg. elbows.

If a single 90-deg. elbow is placed in a flask, the core is not very well balanced and, in addition to a support at each end, will require a chaplet or anchor at about the middle of the core, both in the cope and drag. If two elbows can be cast in a single flask, one core may be made for the two elbows, there being a straight portion between the two flanges. In addition to saving on core work, this arrangement will permit supporting the core at three places, the tendency to unbalance being thereby eliminated, and no chaplets or anchors are necessary. The straight portion of print between the two flanges may be made large enough to provide sufficient bearing area for the core, or a bar of the flask may be

The core in such a case can be definitely located by putting a small shoulder on either end of the core, with of course a corresponding shoulder on the print, thus giving the molder a guide by which he can set his core. This shoulder can be comparatively small and it will also act as a seal in preventing run-outs.

The usefulness of this shoulder on the core can be illustrated in the case of pipe reducers. Here the body thickness of the casting can be altered within considerable limits by shifting the core in a longitudinal direction.

#### Internal Strains in Iron Flasks

A great drawback in the use of cast iron flasks with the bars cast integral, is the replacing of broken bars. In casting the flask it is possible to core holes either in each bar, a short distance away from the side of the flask, or in the side of the flask to allow for bolting loose bars. In the first case a flat steel or cast iron plate, cut and chamfered to suit the pattern, may be used. In the second case, the bar would have flanged ends. This latter method is applicable to existing flasks where holes for the bar may be drilled along the sides.

What is undoubtedly the cause of considerable flask and bar breakage, are the internal strains due to shrinkage of the flask when cast. On all cast iron flasks, there will be considerable shrinkage of the outside frame, and if bars and cross-bars are so placed as to act as struts between the outside frame of the flask and other bars and prevent the frame from shrinking, internal strains are set up which will result in breakage of either flask or bars. The difficulty may often be overcome by so arranging the bars that none will act as a strut in the manner described, or, if this is not feasible, to put a bend or corner in the frame of the flask or the bar, allowing the flask or the bar to deflect slightly when the shrinkage takes place. In some cases it may be advisable to core a break between the bars. In this last case the flask should be so laid out that, while no bar will act as a strut with no chance to deflect, all the bars are well supported.

In any case, internal strains will be greatly lessened by avoiding the junction of a light and heavy section of metal, and by the use of fair-sized fillets at corners.

## BRITISH FOREIGN TRADE

### Imports Expand Rapidly in February—Exports Still Below 1923 Monthly Average

British exports of iron and steel in February were 341,511 gross tons, compared with 345,455 tons in January and with a monthly average of 369,800 tons in 1923.

Imports in February at 223,102 tons were the heaviest in many months, exceeding the large receipts of 182,611 tons in January. The monthly average in 1923 was only 127,800 tons. Comparative data for both exports and imports, scrap included, are as follows:

#### British Steel Exports and Imports, Gross Tons

	Exports	Imports
January, 1924.....	345,455	182,611
February.....	341,511	223,102
Average per month, 1923.....	369,800	127,800
Average per month, 1922.....	295,980	82,215
Average per month, 1921.....	144,885	152,734
Average per month, 1920.....	274,881	128,685
Average per month, 1919.....	188,519	50,801
Average per month, 1913.....	420,757	195,264

More detailed data of the exports are as follows:

#### Principal British Exports, Gross Tons per Month

	1913	1923	February 1923	February 1924
Pig iron.....	93,700	74,100	65,881	33,282
Ferroalloys.....			14,098	7,710
Steel rails.....	42,200	25,700	18,518	24,755
Steel plates.....	11,200	17,700	7,638	15,727
Galvanized sheets.....	63,500	53,800	49,543	59,460
Steel bars, rods, etc.....	20,900	31,500	22,243	25,217
Tin plates.....	41,200	48,300	46,690	44,962
Black plates and sheets.....	11,700	29,500	22,056	26,539

Exports of scrap iron and steel in February were 10,988 tons, compared with 9815 tons per month in 1923 and with 12,880 tons per month in 1922. In 1913 they were 9600 tons per month.

Data as to importations of importance are as follows in tons per month:

	1913	1923	Feb., 1924
Iron ore.....	620,000	487,580	572,138
Manganese ore.....	50,100	43,420	13,554
Pig iron and ferroalloys.....	18,000	9,157	32,195

Imports of semi-finished steel for January and February were 158,642 tons, compared with 86,359 tons for the same two months in 1923. Of this year's total 75,372, or nearly half, came from Belgium.

## Magnesite in 1923

The Department of the Interior announces through the Geological Survey that statistics compiled by J. M. Hill show that the magnesite material marketed in the United States in 1923 from domestic mines was equivalent to 147,250 net tons of crude magnesite, an increase of 164 per cent, compared with the quantity marketed in 1922. Eight producers of magnesite in California in 1923 were operating at 11 localities in Napa, San Benito, Santa Clara, Stanislaus, Tulare and Tuolumne counties. In Washington the output came from three properties near Valley and Chewelah, in Stevens County.

A detail that will save considerable time in a foundry and which is seldom given attention, is the matter of clamping. It is common practice to provide clamps and loose steel or wooden wedges for flasks. The loose wedges may be eliminated by providing the flask with a tapered clamping lug, on both the cope and the drag. The lugs may be standardized and the number of sizes of clamps kept down to a minimum.

One matter having particular reference to heavy floor work, which is very often a matter of guesswork and on which foundry foremen may appreciate information, is the upward thrust on the cope of the flask and the weight required to keep it down.

The upward thrust of the core is transmitted to the cope, and there will also be an upward thrust on the cope itself due to the pressure of the metal. The weight required to hold down the flask will be the total upward thrust less the weight of the cope and the sand it contains. The weight of the flask may be easily figured and sand rammed in the mold may be figured as weighing 120 lb. per cu. ft.

Official data show that the magnesite material imported for domestic consumption in 1923 amounted to 5182 tons of crude magnesite; 10,928 tons of caustic calcined magnesite, and 61,726 tons of dead-burned magnesite. These figures appear to indicate that the foreign producers can mine and calcine magnesite more cheaply than the domestic producers. No crude or calcined magnesite was exported.

#### Magnesite (Expressed as Crude) Consumed in the United States, 1918-1923, in Net Tons

Year	Domestic Production	Imports	Apparent Total Consumption	Proportion of Consumption Supplied by Domestic	Proportion of Consumption Supplied by Foreign
1918	231,605	43,530	275,135	84	16
1919	156,226	25,321	181,547	86	14
1920	303,767	63,110	366,877	83	17
1921	47,904	65,569	113,473	42	58
1922	55,790	217,861	273,651	26	74
1923	147,250	150,490	340,829	43	57

The table shows that the domestic producers regained in 1923 some of the market they lost in 1922, largely, probably, because of the protection afforded by the new tariff act. Operators report, however, that even with the present tariff it is almost impossible to compete with either dead-burned or caustic foreign magnesite in the Eastern markets on account of the great cost of production and high freight rates.

## Iron and Steel Production of Belgium

During the two first months of 1924 the iron and steel production of Belgium, in metric tons, was as follows:

Furnaces in Blast	January 41 Furnaces	February 42 Furnaces
Pig iron.....	208,980	206,000
Steel ingots.....	224,670	220,000
Steel castings direct.....	6,300	6,750
Finished steel.....	200,900	193,000
Finished iron.....	19,270	18,000

## Iron and Steel Production in Luxemburg

During February the Luxemburg output was: *Pig Iron*: Thomas iron, 165,148 tons; affinage iron, 165 tons; total, 165,313 tons. *Steel*: Thomas steel, 147,599 tons; open-hearth steel, 2862 tons; electric steel, 491 tons; total, 150,952 tons.

Exports of tin from the Straits Settlements in February amounted to 6182 tons, of which 74 per cent went to the United States, 19 per cent to the United Kingdom, and 6 per cent to Europe, according to a cable received by the Department of Commerce from Vice Consul H. S. Miller at Singapore.

Fire recently destroyed the naphtha building and threatened the entire benzol plant at the Gary, Ind., coke works of the Indiana Steel Co. Damage was estimated at \$150,000.



# Improving Flexibility and Cost of Power

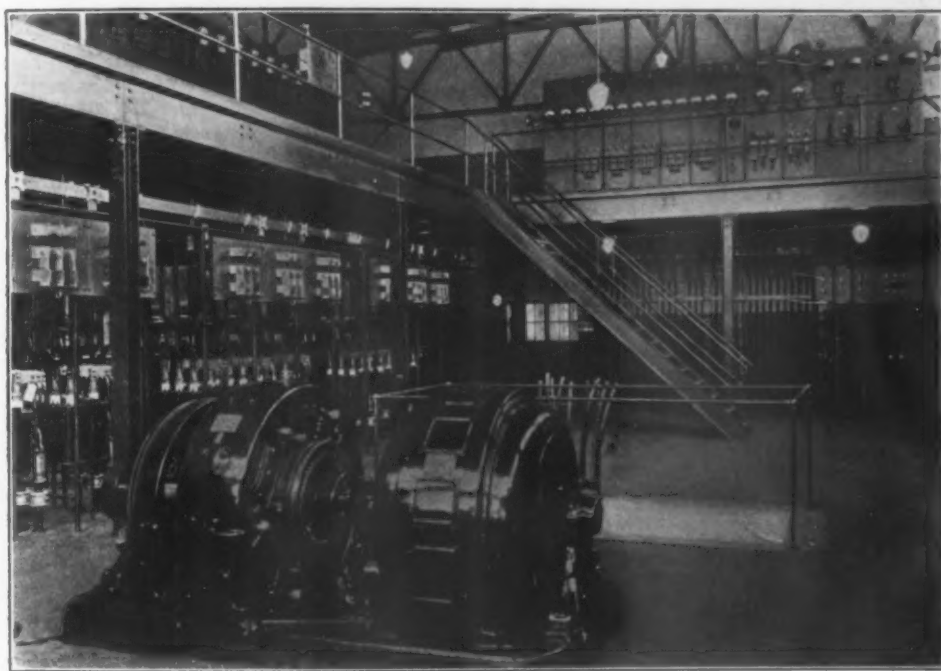
## Tying Up of Own Power Stations with Current from Public Service Company Gives Wire Plant Exceptional Ease of Control and Freedom from Interruption

**C**HANGES in power units which had their inception in a disastrous fire in 1910 have been made at the Trenton, N. J., plants of John A. Roebling's Sons Co. Advantage was taken of the necessity to rebuild, to introduce electric drive on a large scale in the new mill, which was the first one in the plant to be electrically operated throughout. The gradual elimination of direct steam drive for operating units now has been almost completed and practically the entire plant is operated electrically today. This condition was furthered by the rebuilding following two later fires, the

the steam consumption per unit of power is less than half that formerly required.

Another of the principal reasons for changing over to electric drive, aside from the inefficiency in steam generation and consumption of the steam units so long in use, has been the excessive friction load of those units. The main drive in a 5-story mill transmitting the power of one of the 1500-hp. engines was found to have a friction load of 400 hp., or more than one-quarter of the entire engine load.

Some eight years ago the company built an electric



Control Room in the Sub - Station, with Direct Current Instruments on Balcony at Right and Alternating Current at Left. Behind the motor-generator set are the distributing switches, with a portion of the loop bus-bar showing above them

most recent being one of the suspicious wartime incidents.

In common with most plants of considerable age, the Roebling plant has been built up one section at a time, without the use of a comprehensive building scheme. Like "Topsy," it simply grew through the years since its establishment in 1848. It was built largely, also, before the general introduction of electric power for driving machinery. These two circumstances resulted in the installation of a large number of steam engines at various points of use all over the plant, wherever power was needed, and varying in size from 1500 hp. to less than 100 hp. These numerous prime movers drew their steam from a large number of boilers, mainly of the return tubular type, and likewise scattered over the plant, there having been no fewer than seven separate boiler houses in the one main works in Trenton.

### Savings in Fuel and Friction

Wasteful use of fuel is the usual result of generating and applying energy in this manner and this case was no exception. Coal did not cost, in the earlier days, what it does today. Most of the engines took steam at 90 lb. pressure and were non-condensing. If their power was generated at less than 35 lb. of steam (average) per hp. hr., they did better than most engines of their character. With the present arrangement of electric drive derived from high-power steam turbines

power plant which contains three turbine-driven generators aggregating 4000 kw. These are respectively one unit of 2000 and two of 1000 kw. Similarly at the Buckthorn plant, a half mile away, a modern power plant was installed with two 500 and one 1000-kw. turbo-generators. The electric power thus obtained resulted in the elimination of some of the most wasteful of the steam engines.

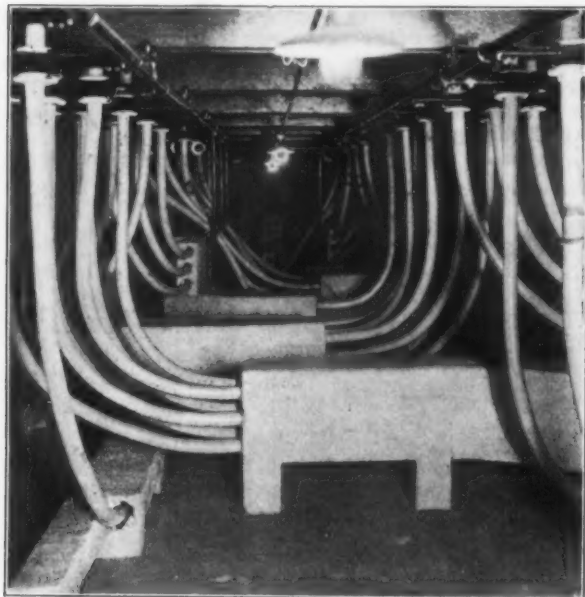
### Purchased vs. Generated Power

Under the new arrangement, which is now well along in operation, the power lines of the company are tied in with those of the Public Service Corporation of New Jersey, drawing power from the large plant at Burlington, N. J., 15 miles down the Delaware River from Trenton. Current from the Public Service lines, at 26,400 volts, comes into a new sub-station in the midst of the Roebling plant. Here it is transformed to a lower potential (480 volts) for distribution over the works. Interconnections between the two power plants of the company make it possible now to use the Public Service current for either the main plant or the Buckthorn plant, or to use either one or both of the company's own plants for power.

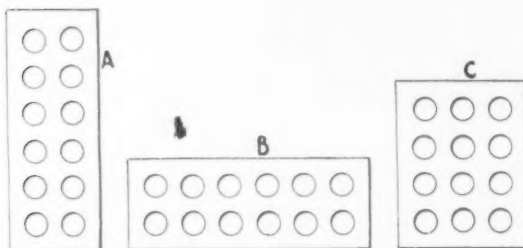
It will always be necessary to operate at least one of the power houses, because the total demand will be more than the purchased power equipment provides. What will happen, however, is that while a guaranteed amount of power will be taken from the Public Service

lines, the excess load will be divided between the two sources as will be found most economical, depending upon the relative cost of home made and purchased current. When constants are determined, they will determine the division of loads.

As the starting energy required for the big rope machines is considerable, a tremendous peak load would be shouldered if all these were to be started simultaneously in the morning. Hence it is planned to stagger them somewhat, over a period of perhaps 20 minutes, and to absorb as much as possible of this peak in the local station. This will reduce the maximum "demand" on the Public Service lines, on the extent of which, largely, the charge for purchased current is based.



Below the Distributing Switch Connections in the Control Room, the Various Power and Lighting Wires are Led Into Conduits and Carried Underground to the Point of Use. These conduits are arranged like A or B (below) but never like C, for that prevents the inner cables from getting rid of surplus heat



In making this change over, the 71 boilers in the seven boiler houses of the main plant have been reduced to 19 in two boiler houses. Six of these, of 600 boiler hp. each, supply steam for the 4000-kw. generating plant; four others of the same size are used for heating and general manufacturing requirements; while nine small return tubular boilers, fitted with stokers, will be used for auxiliary purposes.

#### The New Sub-Station

One of the old boiler houses, which happened to be strategically situated and to be of about the proper size, was retained for the new sub-station. Except for the steel frame structure, however, it was entirely rebuilt, the old corrugated iron siding and roof being removed and a 12-in. brick wall and a gypsum precast roof covered with slag being substituted. Steel sash and wire glass, together with a red "mineral" floor on a concrete base have been fitted. This building, which measures 42 x 100 ft. and is 20 ft. high to the lower chord of the roof trusses, houses the high-tension incoming lines, the direct current and alternating current distributing panels, switches and apparatus, and two

motor-generator sets (one of which has not yet been installed) for providing direct current to such services as need it. These two sets are 360 and 750 kw. respectively, running at 1200 and 720 r.p.m. Both are operated at 250 volts.

The whole layout of the building has been designed with a view to doubling the capacity when this shall become necessary. In doubling the power of the present sub-station the only changes required will be the installation of another large 37,000-volt circuit breaker in the high-tension room and a bank of three new transformers of 5000 kva., together with the necessary cables for connecting up.

On the outside of this building are three oil and air cooled transformers, one for each phase of the three-phase current received, together with a spare transformer which can be cut in on short notice in case anything goes wrong with one of the regular units. These transformers are mounted on four-wheel trucks and served by a transfer car, permitting easy handling under the conditions just outlined. The additional three transformers for the added power contemplated at a later date will be placed immediately to the right of those now installed.

#### Power Lines

The incoming line from the power company is of the full 10,000 kva. capacity (8000 kw. at 80 per cent power factor). Each cable is three conductor, 350,000 circular mils, and encased in lead. After entering the sub-station the phases are separated, each running to its own 600-ampere disconnect switch, from which it is carried overhead to current transformers, thence to the 37,000-volt circuit breaker, and thence to the air-cooled transformers outside the building. From the transformers current is carried directly in back of the switchboard by means of leads in the pipe conduits shown in the transformer illustration. Each transformer has eight weather-proofed conductors of 1,500,000 circular mils capacity, four in each conduit. Taps for all power and lighting switches are taken from the copper flat-bar loop bus, the front section of which is shown in two of the illustrations.

In the gradual replacement of steam engines during the past half dozen years the twelve principal units which have disappeared aggregated about 9200 hp. rating, with perhaps 200 hp. more in the smaller engines. The electric power house now on the property, which was considerably overbuilt at the time it was built, is good for approximately 6000 hp., while the same is true of the new sub-station, thus giving about 12,000 hp. Again the plant is overbuilt to take care of future needs and of sudden demands for overloads.

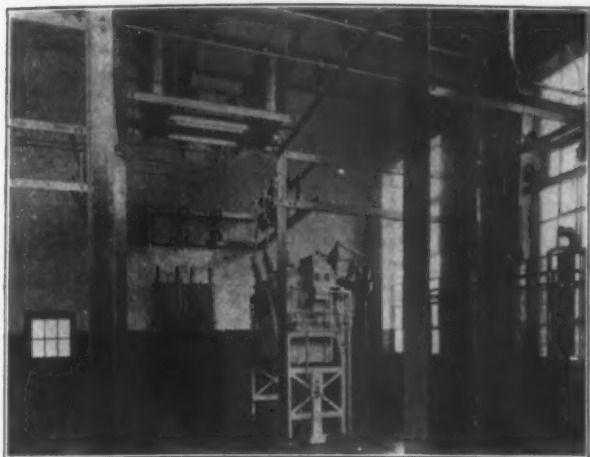
#### Safeguards

To avoid the possibility of turning one station against another in the interlocking arrangement automatic control is provided to prevent switches at one end of cables being thrown in until the switches at the other end are thrown out. This is done by magnetic locks operated at 110 volts and attached to the oil circuit breakers at both stations.

Some of the minor points in connection with the design, while not new, are a little unusual. For instance, the cable conduits, no matter where located, are never carried more than two deep in one direction. As each unit thus has at least one side radiating to the open air or earth, this prevents overheating. Similarly, the conduits are carried in concrete or similar passages as near as possible to the point of use, so that in case anything happens to one there will be little danger of the trouble being communicated to its neighbor. All of the switching apparatus is provided with disconnect switches through which the current passes in operation.

Unusual flexibility is provided, also, in the arrangement of the recording apparatus on the switchboards, for it is the practice of the company to charge each department with its own use of power and these instruments make the distribution possible. In a few cases, where more than one department is located in a single building, there are separate meters installed in the several departments, instead of in the main power station,





Above Is Shown the High - Tension Room, Where the Three Phases are Separated, Each Running Through Disconnect Switch, Circuit Breaker and Transformer Before Going to the Outdoor Transformers (at Bottom of Page)

At Right Is the Alternating Current Control System, with Indicating and Recording Instruments on Balcony and Switches Below. The structural frame of the building is all that is left of one of the old boiler houses

Below are the Service Transformers, One for Each Phase and One Spare. The truck at left permits handling the units whenever necessary



because in such case the feed line going to that building carries current for all of the departments involved.

#### Changes at Kinkora

Somewhat similar changes are in process of being made at the company's Kinkora plant at Roebling, N. J., ten miles down the river. Here 3600 kva. will be brought in, of which 600 will be used for operating the wire cloth department, at 480 volts alternating current. The remaining 3000 kva. will be transformed to 2300 volts and then converted by motor-generators to 250 volt direct current to supplement the present d.c. power house for the main plant. Some 1500 hp. of this additional d.c. power will be used to operate a d.c. mill motor to increase the production of one of the rod mills. In the wire cloth plant two engines of 250 hp. each will be entirely replaced.

This current, coming likewise from Burlington over



the Public Service lines, will be also 26,400 volts at entrance. The power equipment going in at Kinkora is Westinghouse, while that at the main plant in Trenton is General Electric.

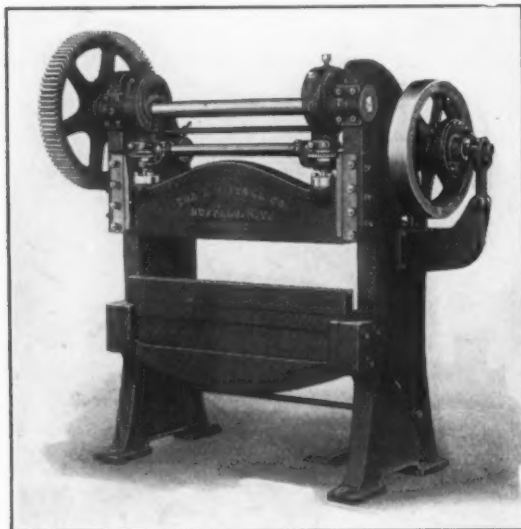
An immense pile of junk, consisting of 40,000 tons of railroad car wheels, trucks, springs, bolts, etc., which were manufactured in Canada and the United States and assembled in the Canadian Pacific Railway Co.'s yards at Vancouver and at Port Coquitlam for transportation to Russia in the early stages of the war, is advertised for sale in London, England, on April 15. The material was manufactured at the order of the British and French Governments and was designed for use on the trans-Siberian railroad. It is of a size unsuited for any other railroad. It covers several acres of ground, where it is gradually reverting to ferric oxide. The original cost of the material is said to have been \$14,000,000, but as scrap it is not expected that it will realize \$1,000,000.

The National Industrial Conference Board after May 1 will occupy the fourth floor of the new Park-Lexington Building, New York. The board at present has its headquarters at 10 East 39th Street.

### New Power Brake

The power brake illustrated, equipped with a foot-pedal-operated combined friction clutch and brake, which permits the operator to stop the machine in any position and is of particular advantage in setting the dies, has been placed on the market by the D. H. Stoll Co., Inc., Buffalo.

The machine is designated as the No. 185, and is intended for use where heavy power brakes would be cumbersome and standard power brakes unsuitable because of the absence of the foot pedal arrangement noted. The brake illustrated is equipped with a special type bed and slide which is intended to provide maximum



A Foot-Pedal-Operated Combined Friction Clutch and Brake. Permitting of Stopping the Machine at Any Position Desired, Is a Feature

clearances for bending work. A riser is furnished to permit the use of dies having extremely acute angles.

Sheets up to and including 20 gage are within the capacity of the machine. The specifications are as follows: Distance between housings, 51 $\frac{1}{4}$  in.; distance from slide to frame, 2 $\frac{1}{2}$  in.; distance bed to slide, stroke down and adjustment up, 9 $\frac{1}{2}$  in.; standard stroke of slide, 3 in.; height of riser, 4 $\frac{1}{2}$  in., and the area of the bed is 2 $\frac{3}{4}$  x 51 in. The flywheel is 24 in. in diameter, weighs 280 lb. and runs at 180 r.p.m. The floor space occupied by the machine is 34 x 82 in. and the overall height is 84 in. The weight is 3800 lb.

### Fluorspar in 1923

The shipments of fluorspar in 1923, according to a statement compiled by Hubert W. Davis of the Geological Survey, showed a decrease of 16 per cent compared with 1922. The reported average selling price, f.o.b. mine shipping point, increased from \$17.88 in 1922 to \$20.69 in 1923. Colorado and New Mexico were the only States that showed an increase in 1923. The decrease in shipments in Illinois amounted to 23 per cent. The shipments of fluorspar to foundries and for use in the manufacture of hydrofluoric acid, glass, enamel, and sanitary ware were larger than in 1922, and the shipments to steel plants and for export were smaller.

Imports of fluorspar into the United States in 1923 amounted to 42,226 net tons, the largest since 1910. The imports in 1923 were equivalent to 35 per cent of the domestic shipments of fluorspar as compared with 23 per cent in 1922. England was the principal source, supplying 54 per cent of the total.

The producers of about 95 per cent of the basic open-hearth steel made reported that they consumed 130,499 tons of fluorspar in 1923 and had stocks on hand amounting to 47,219 tons on Jan. 1, 1924. If the steel companies that did not report consumed a like proportion of fluorspar, the figures given indicate a total consumption in all steel plants of about 137,000 tons in

1923 and total stocks of about 49,700 tons on hand Jan. 1, 1924. The total consumption of fluorspar by steel plants in 1922 was about 104,000 tons and the total stocks on Jan. 1, 1923, were about 65,000 tons. The consumption of fluorspar per ton of steel produced in 1923 averaged 8.1 lb. as compared with 7.4 lb. in 1922.

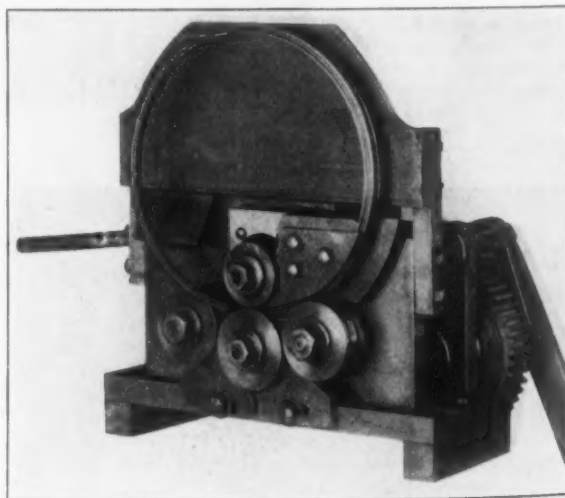
### Machine for Bending Complete Rings

The Wallace Supplies Mfg. Co., 1310 Diversey Parkway, Chicago, has placed on the market the bending machine illustrated, which has been designed for bending rings from solid bars, small tubing, channels and special sections, completing the entire circular formation including the ends.

The ring shown in the illustration of the machine was bent from a solid bar of extruded brass of a special section suitable for use on automobile headlights. The total metal area is approximately equivalent to that of a solid square bar  $\frac{1}{2}$  x  $\frac{1}{2}$  in. The diameter of the ring is 10 in., but larger or smaller rings may be made on the same machine. Larger machines of this model for bending heavier sections are available.

The material is fed into the machine from left to right, the end being firmly gripped between the two centrally located rollers, through an eccentric lever on the reverse side of the machine, the projecting handle of which may be seen at the left in the illustration. Two adjustable shoes at the bottom of the machine extend upward between the first and second and the second and third rollers. These shoes are accurately machined to fit the contour of the stock to be formed, and they assist in accurately guiding and forming the metal as it is drawn forward between the rolls. They are adjustable to permit making small variations in the diameter of the ring to be formed in order to allow for the spring of the metal or otherwise. The shoe at the right-hand of the upper center roller is also machined to fit accurately the stock which is to be formed and for which it acts as a guide. At the left-hand side of the machine a deflecting plate is provided so that the end of the ring which was first formed may properly clear the rolls as it sweeps around.

The rolls may be made so that they will form flat



Bending Fixture for Making Rings from Solid Bars. Small Tubing Channels and Special Sections. Completion of the entire circular formation including the ends is claimed

strips of light gage metals into a wide variety of special formations such as U's and Z's, S's or other shapes. These rolls form the strips into a completed ring suitable for use in finishing off the rims or edges of various articles requiring a metal edge-binding, such as the edges of loud speaker horns and lamp rings.

Although hand operated, the machine may be arranged conveniently for belt drive. Operated by hand, the bending is done at a speed of about 10 to 15 ft. per min., this being materially increased, of course, with the power drive.



# Plan to Draft Men, Money and Property

Pending Bill, It Is Declared, Would Notify the World That All  
Resources of the Nation Can Be Made Immediately  
Available for Defense

BY L. W. MOFFETT

WASHINGTON, April 15.—Cabinet officials, Assistant Secretary of War Dwight F. Davis, and other prominent witnesses last week approved the purpose of bills in Congress to draft capital and property, as well as men, in time of war. Hearings on measures of this kind still are under way before both the House Committee on Military Affairs and the Senate Committee on Military Affairs. The measure before the Senate committee was introduced by Senator Capper, is similar to one of those before the House committee and is being actively sponsored by the American Legion.

While there is a variance in suggestions as to how to mobilize money and property and to prepare the country industrially in the event of war, all of the witnesses were in accord with the idea of the Government assuming as complete control over capital as it would over man-power. Among the witnesses was Secretary of Commerce Hoover, who outlined a specific plan of industrial preparedness which in effect would be a dictatorship operated through administrators of industry and railroads under authority of the President of the United States. His scheme was suggested as a substitute for the War Industries Board. Mr. Hoover's testimony was presented before the House committee. Secretary of the Navy Curtis D. Wilbur also appeared before the House committee, suggesting an amendment to the constitution as a means of drafting money and property. He questioned the constitutionality of any legislation with such a purpose in view unless it was actually written into the organic law of the nation. It was his contention that the constitution provides that property cannot be commandeered without due processes of law, but committee members pointed out that during the World War President Wilson had properly by proclamation directed that prices be fixed in basic commodities, thereby limiting profits. Representative Daniel E. Garrett, of Texas, maintained that Congress would have ample authority under the constitution to mobilize all resources in the country, including capital and labor.

Secretary Wilbur admitted that in wartime the courts might sustain an act of Congress mobilizing industries as well as men, as an emergency measure. Representative John J. McSwain, of South Carolina, author of one of the pending measures, referred to a section in his bill which is intended to meet the matter of a constitutional provision against commandeering property without adequate compensation. His bill proposes that the President shall be authorized to appoint members of the inferior courts of the United States, each to be designated as "a court of compensation." It would be the purpose of these courts to fix fair prices of commandeered property.

## Would Submit to Dictatorship

In suggesting his proposal to give the President extremely broad powers in time of war, Secretary of Commerce Hoover said that, while in peace times the American people are democratic, no other people on the globe are more ready to submit in time of war to a dictatorship. It was partly on this theory that he submitted his plan to make the President in effect a dictator for the purpose of mobilizing all resources, including industries and men, and providing a penalty for corporations or individuals for the violation of moral duty to cooperate in prosecuting the war.

Secretary Hoover read to the committee a letter which he had prepared, and which was addressed to Representative McSwain. This letter completely outlined the idea of Secretary Hoover for mobilizing re-

sources of the country and the method of operating the system during war.

"I have been informed that you desire to have my opinion on the bill you have introduced in respect to organization and mobilization of industry and the civil population in war. I am in firm agreement with two principles which you have under consideration, first to blot out any expectation or realization of a profit as the result of war, and second to be forehanded in organization.

"While I have the impression that in case of another war, some years hence, the conditions surrounding it might require a set-up apropos to its nature, on the other hand greater preparedness in administration organization would have prevented many losses and much confusion which occurred during the early stages of the last war owing to the time required to develop adequate administration. The conditions then were unprecedented and organization had to a considerable degree to be developed by experience.

"The form of organization which you propose is, to a large extent, the enactment of the organization of the last war as it stood at its final stages. I have the feeling that this form of organization was faulty in many places, and that we might well consider a more perfect organization in which these faults should be corrected.

## Instant Decisions Required

"It seems to me that for all administrative functions war especially requires single-headed responsibility. Men must make instant decisions and take instant responsibilities; therefore the use of boards or commissions for administrative and executive functions is fundamentally wrong. It results in vacillation, delay and compromise. On the other hand, questions of semi-judicial or policy character can advantageously be determined by more deliberate agencies, such as a board, and some functions of coordination of policies must be performed by them.

"With this thought I would, therefore, create an administrator of munitions, instead of a War Industries Board, and would provide that the munitions divisions of the Army and Navy should be immediately transferred to his direction, and that he should then develop the general coordination of industry necessary for the complete industrial mobilization of munition manufacture and the control of the sequent disturbances which necessarily arise in civilian commerce.

"I would exclude from his activities any control of food, fuel, labor or transportation. I would likewise set up an administrator of overseas trade in place of the war trade board, and I would give to this administrator practically control of imports and exports and an advisory body for the determination of policies, comprised of representatives of the munitions, food, fuel, shipping and railroad administrators, such an advisory board to formulate policies. I would set up a power administrator instead of the power commission.

"I would set up a shipping administrator and a railroad or inland transportation administrator, in addition to these which you have provided.

"I would maintain the Price-Fixing Commission as you have outlined and, aside from the chairman, I would comprise this again of representatives of the munitions administrator, food administrator, fuel administrator, shipping administrator and labor administrator, and would give to it the responsibility of determining prices of all commodities and to determine wages.

"I would make the War Council comprised of the Secretary of War, Secretary of the Navy, Munitions

Administrator, Food Administrator, Oversea Trade Administrator, Fuel Administrator, Railroad Administrator, Chairman of the Price-Fixing Commission, who would sit directly under the authority of the President.

"There is a minor addition to the food section I would suggest, in that the food administrator should have power to promulgate and enforce rules against waste, destruction, hoarding, speculation, and profiteering.

"I would also suggest that from a legal point of view a general clause should be added to the bill, giving a blanket authority to the President to fix prices, wages, transportation charges, compensations, embargoes on imports and exports; to exercise the war power of requisition under circumstances that 75 per cent of the estimated value may be paid, and the balance made by the courts in case of disagreement; suspend habeas corpus, and generally complete and absolute authority in all ramifications over the whole civilian life, with the provision that he may delegate the authorities through the various agencies.

"War is an unhappy business and the great bulk of our ordinary safeguards of life must be forgotten and, the more evident it is that the whole nation will be put in the storm and made to bear its share of the sacrifice, the less likely we are to go to war."

Assistant Secretary of War Davis, whose office is

directly in charge of industrial preparedness under the national defense act, told both the House and Senate committees that one of the real problems is to give the President specific authority to determine priority over resources and to stabilize prices. He declared that the thing to do is to frame a law now for industrial mobilization so there will not be the waste that there was during the World War.

Army general staff officers appearing before the Senate committee said that enactment of the Capper bill, which follows the lines of the McSwain bill, would prove a greater influence for the maintenance of peace than any program of disarmament yet proposed. Some of the army officers suggested a number of minor changes in the bill, one of which would extend authority for conscription of man-power and material resources to include "all the public armed forces" instead of "the military establishment." It was declared that the provision for exemptions should be eliminated and that only "deferments from service" granted.

Lieut. Col. Raymond Bridges, Chief of the General Staff Mobilization Section, said that the bill, if enacted, would be a notice to the world that every resource of this nation is immediately available for national defense. He declared that there is not a nation in the world that would not hesitate to arouse that aggregate power.

## Sees Some Factors in Industrial Activity Slowing Up

Some Slackening in Building Construction, Railroad Buying and Automobile Demand—Signs Point to Slow Recovery of Farmer

IN studying the present economic situation in this country, one is confronted not by a general condition but by a mosaic of different conditions. This, in effect, was the statement of Archer Wall Douglas, St. Louis, at the annual dinner of the Sales Executives' Division, American Management Association, at Hotel LaSalle, Chicago, April 10. Mr. Douglas is chairman of the Committee on Business Standards and Statistics, United States Chamber of Commerce, and for 45 years has been with the Simmons Co., St. Louis. A survey of current conditions in the various States discloses gradations ranging from poor to good. The general impression one derives from the whole picture, however, is that industrial life is back to normal, and by normal Mr. Douglas means a situation in which demand is unequal to supply. The uprush in business last spring was to fill empty shelves, but since that time there has been a steady and orderly replacement of goods as they are consumed.

Among the major commodities, textiles are slow, because the consumer refuses to pay high prices. This is a striking illustration of the great power of the ultimate consumer and indicates how his attitude of mind is immune to cost considerations which confront the manufacturer. The price of wool, it is to be noted, should be high, as there are no more sheep today than ten years ago, and there are many more people.

### To What Extent Is There Overbuilding?

The three factors which have had the most to do with industrial activity in the past year are building, the railroads, and the automobile industry. Building has been confined largely to the cities, inasmuch as the farmer has no surplus after paying his expenses, to put into construction work. It is now increasingly apparent that in all the large cities apartments are overbuilt and construction still being undertaken is speculative. There is yet room for residences, particularly in the suburbs, the development of which has been stimulated by the automobile. There also continues to be expansion of city industries to nearby small towns, because of the obvious advantages of building branch plants

where a smaller overhead is encountered and labor conditions are more satisfactory. Downtown garage buildings will also continue to be constructed in those large cities where parking restrictions are enforced. Mr. Douglas' concluding comment on the construction outlook was that building material prices and wages continue to rise and are creating a situation which will bring its own cure.

Railroad buying, according to the speaker, is slowly diminishing, because much of the work which needed to be done has been completed.

The automobile, no longer a luxury, but a recognized necessity of life, presents one dangerous phase, i. e., the increasing number of sales on the time payment plan. The results of this policy will not be so serious as some fear, owing to the firm foundations of the Federal Reserve system, but they will probably take the form of individual bankruptcies.

In the next few months, Mr. Douglas asserted, each of these three factors, i. e., building, the railroads and automobile industry, may be expected to taper down as sources of business activity.

### Gradual Betterment in Agriculture

The agricultural situation, in his opinion, is changing slowly, but is not a cause for apprehension. Fifteen per cent less winter wheat has been planted this year than last, but acreage is not necessarily significant, inasmuch as heavy crops have frequently been obtained from small acreage. A lighter wheat crop, however, might prove to be a real benefit to the farmer this year. The problem of the farmer is not production, but to get a living wage for what he produces. When a business man behind a mahogany desk in New York advises the wheat farmer to diversify, he is ignorant of the difficulties which impede the consummation of that end. It is not so easy to diversify in such sections as western Kansas and North Dakota where rainfall is lighter and the climate is less kindly than in the States further east. It will suffice to say, however, that progress is being made in the direction of diversification, but that this progress is necessarily slow, because it requires



time and money to effect changes in methods of farming, and the financial condition of the western farmer is anything but good.

The American agriculturist, however, is not lacking in ability. He is not the greatest producer per acre, but without exception is the greatest producer per man in the world. The adjustment in the agricultural situation, however, is under way, although it is developing

slowly. Until it is effected, no real prosperity can be expected. The trend apparently is in the right direction, and farm products can be expected to advance gradually, while other products decline. Europe, the great foreign customer for American farm products, is coming back slowly, and as it recovers the situation in this country will steadily improve. What American business needs above all other things is patience.

## DR. MOLDENKE SPEAKS

### Tells New England Foundrymen's Association About Observation in Germany

With the exception of the annual meeting held in January, the April meeting of the New England Foundrymen's Association, held on the ninth, at the Exchange Club, Boston, was the largest attended in more than a year. Dr. Richard Moldenke, Watchung, N. J., was the guest of the evening. Norman Russell, president, presided. Announcement was made that President Russell will entertain the members of the association at the June meeting, which the Newark and Philadelphia associations will be invited to attend.

Dr. Moldenke spoke at some length on his experiences in Europe in the fall of 1923. He said that in Germany foundry associations holding conventions and exhibitions are giving greater attention to educational matters rather than to equipment, the purpose being to provide books and papers on modern foundry practice for the advantage not only of the employer but the employee as well.

He also spoke at some length on efforts in Europe to develop a test bar to be used internationally. The claim was made that our bar, 12-in. in length, is too short, and that the 24-in. bar commonly used in Europe is too long. In developing the new test bar there has been a compromise, its length being 18 in. Experiments are now being conducted to determine what diameter will show the best curves. In France they have a way of testing with a hollow drill. In testing castings, tests are made on parts of casting only. Through the efforts of Dr. Moldenke, the French have agreed to use the test bar for experimental purposes.

Three years ago, at a meeting of the local association, Dr. Moldenke spoke on a desulphurizing process being tried in Germany. At that time Dr. Moldenke had not had an opportunity to study results obtained by this process. During the fall of 1923, he did, however. A trap is maintained just below the spout of the cupola. As the iron flows through this trap, contact is made with a soda deposit. It is then allowed to flow into a vat from which it is drawn off in ladles. By using this process foundries have been able to reduce the sulphur content of iron from 0.18 to 0.06, and to use a mixture of 90 per cent of scrap and 10 per cent of pig iron.

### To Discuss Rights of Trade Associations

Trade associations and their activities will be given attention at the forthcoming annual meeting of the Chamber of Commerce of the United States at Cleveland, May 6 to 8.

Three separate proposals concerning trade associations have been submitted by member organizations of the national chamber for consideration at the convention. The substance of these proposals, and the organizations that submitted them, follow:

The Memphis Chamber of Commerce proposes that the national chamber should advocate creation of a commission which would define the rights of trade associations and their members in all respects, including their rights to discuss operating expense, sources of supplies for materials, prices, trade competition, etc. A study of anti-trust laws and of the Federal Trade Commission's powers and activities would be included. The purpose would be to establish recognized principles

which would remove handicaps under which trade associations now operate, through fear that they may violate some law, rule or regulation and be called before a commission or the courts upon a criminal or civil charge the existence of which, regardless of the merits, is detrimental.

The Southern Central Division of the national chamber recommends that all possible steps be taken to obtain elimination of obstacles and uncertainties which interfere with the most effective carrying out by trade associations of their function of disseminating information.

The National Coal Association proposes that the President of the United States be asked by the national chamber to direct the Attorney General to institute a test case of such a character that it will determine the legal status of activities of trade associations in gathering and giving to the public statistical information concerning production, distribution, cost and prices when no improper private use of such statistical information by the association or its members is alleged.

## Safety Engineers Meet

Sixty safety engineers and foremen in greater Boston industries held a meeting last week in Boston at which Gen. E. L. Sweetser, commissioner of labor and industries of Massachusetts and a director of the Massachusetts Safety Council, presided. He stated that the trend of accidents was downward until last year, when they increased. The increase, he declared, might be due to the larger number of people employed, and intimated strongly that safety engineers should increase their efforts. Lewis E. MacBrayne, general manager of the council, urged dramatization of industrial accidents. This being the age of radio and moving pictures, he believes they are the best means of presenting the dangers to the public and workers.

## Industrial Psychology to Be Discussed at Taylor Society Spring Meeting

"Industrial Psychology—a Layman Asks Some Questions," is the title of a paper to be presented by Dr. H. S. Person, managing director of the Taylor Society, at a meeting of the society to be held in Cambridge, Mass., April 24 to 26.

Unusual interest in industrial psychology was manifested at the January meeting of the society, at which it was voted to include papers on that subject in future meetings. Dr. Person's paper is intended as a preliminary to a series of papers by psychology experts, and aims to formulate some of the queries of practical executives.

The meeting is in cooperation with the New England section of the society and under the auspices of the Harvard University Graduate School of Business Administration, the College of Business Administration of the Boston University and the Massachusetts Institute of Technology. There will be two evening sessions, two morning sessions and one afternoon session, one paper being presented and discussed at each session.

A paper on "Master Planning Control of Sales and Production" will be presented by J. H. Barber, staff assistant to the president, Walworth Mfg. Co., Boston. The Walworth company is considered one of the pioneers in the development of master planning which coordinates sales, finance and production.

Other papers include: "Operating a Scientific Man-

agement Plant in Agreement with Organized Labor," by Mrs. J. C. Williams, director of personnel the Plimpton Press, Norwood, Mass., and "Who Can Hire Management?" by H. S. Dennison, president Dennison Mfg. Co., Framingham, Mass.

### Program of Gear Manufacturers' Meeting in Buffalo

Program has been issued for the eighth annual meeting of the American Gear Manufacturers' Association to be held at the Lafayette Hotel, Buffalo, April 28, 29 and 30.

The first general session will be held at 1.30 p. m., Monday, April 28. George L. Markland, Jr., the Philadelphia Gear Works, president of the association, will deliver an address on "The Year in Prospect," and W. E. Sykes, Farrell Foundry & Machine Co., Buffalo, will speak on "Gear Practice in England."

The second general session will be held at 8 p. m., Monday evening. "What Have I Left Out?" or "The Value of Cost Accounting to an Executive," will be the address of the evening, the speaker being Russell C. Ball, the Philadelphia Gear Works.

On Tuesday morning, following the election of four members of the executive committee, L. G. Hewins, manager Van Dorn & Dutton Co., Cleveland, will speak on, "The Gear Manufacturer Needed."

Tuesday afternoon has been set aside for sightseeing and visitation.

At the informal banquet to be held Tuesday evening, April 29, the speakers will be James B. Horn, a Russian with a message, and S. F. Fannon of the Sherwin Service, Inc., whose subject is "The Seventy-Five Cent Dollar in Business."

At the fourth general session at 9.30 o'clock Wednesday morning, addresses will be made by E. S. Sawtelle, Tool Gear Steel & Pinion Co., Cincinnati, whose subject has not been announced; F. E. McMullen, the Gleason Works, Rochester, N. Y., who will speak on the "Application of Spiral Bevel Gears," and J. C. McQuiston, advertising manager the Westinghouse Electric & Mfg. Co., whose subject is "Advertising as an Investment for the Gear Manufacturer."

The closing session on Wednesday afternoon will be featured by addresses by Stanley P. Rockwell on "Practical Metallography," and by M. A. Durland, assistant professor of machine design, Kansas State Agricultural College, who will speak on "Gears and Pinions of Equal Strength."

## COMING MEETINGS

### April

**National Metal Trades Association.** April 23 and 24. Annual convention at the Hotel Astor, New York. Louis W. Fischer, Peoples Gas Building, Chicago, secretary.

**American Welding Society.** April 23 to 26. Annual meeting, 29 West Thirty-ninth Street, New York. M. M. Kelly, 33 West Thirty-ninth Street, New York, secretary.

**American Electrochemical Society.** April 24 to 26. Spring meeting at Philadelphia. Dr. Colin G. Fink, Columbia University, New York, secretary.

**Taylor Society.** April 24, 25 and 26. Meeting at Cambridge, Mass. Dr. H. S. Person, 29 West Thirty-ninth Street, New York, managing director.

**American Gear Manufacturers' Association.** April 28 to 30. Spring meeting, Lafayette Hotel, Buffalo. T. W. Owen, 2443 Prospect Avenue, Cleveland, secretary.

**Society of Industrial Engineers.** April 30 to May 2. Annual convention at Buffalo. George C. Dent, 608, South Dearborn Street, Chicago, general manager.

### Welding Society to Hold Annual Meeting

The meeting of several technical committees, a general technical session, an inspection trip to the Brooklyn Navy Yard, the annual dinner and a new feature, a smoker, are among the activities planned for the four-day annual meeting of the American Welding Society, to be held at the society's headquarters, 33 West Thirty-ninth Street, New York, April 23 to 26.

The resistance welding committee, of which Herman Lemp, General Electric Co., Erie, Pa., is chairman, will discuss a completed summary of the present state of that art, and the electric arc welding committee with H. M. Hobart, General Electric Co., Schenectady, as chairman will consider a program of investigation to determine certain fundamentals in connection with electric arc welding, discussing also the welding of non-ferrous metals. Completion of the summary for pipe welding will be taken up by the gas welding committee, of which S. W. Miller, Union Carbide & Carbon Research Laboratories, New York, is chairman. The specifications for steel to be welded committee, which is headed by W. J. Beck, director of research American Rolling Mill Co., Middletown, Ohio, will hold its meeting on April 26.

Welding in railroad shops will be discussed at the technical session to be held on the night of April 25, and an address on the subject will be made by A. G. Pack, chief inspector Bureau of Locomotive and Boiler Inspection, Interstate Commerce Commission. "Flexibility vs. Rigidity in the Design of Welds" will also be considered at this session, the fields covered being gas, metal arc, carbon arc, thermit and resistance welding.

There will be a meeting of the American Bureau of Welding, the joint advisory body of the welding society and the division of engineering of the National Research Council, at which progress reports will be made by research committee chairmen.

A motion picture to be shown by J. W. Meadowcroft, superintendent of welding E. G. Budd Mfg. Co., Philadelphia, and illustrating the applications of welding in the plant of that company, will be a feature of the smoker. C. J. Holslag, Electric Arc Cutting & Welding Co., Newark, will serve as master of ceremonies.

The oxy-hydrogen and acetylene generating plants and the cutting into scrap of two battleships will be seen on the inspection trip to the Brooklyn Navy Yard. The plate shop, machine shop and other places where welding is done will be visited, as well as the foundry, where the casting of water pipe by the centrifugal process will be shown.

Miss M. M. Kelly is secretary of the welding society and William Spraragen is secretary of the American Bureau of Welding.

### Steel Corporation's Orders Decrease

Unfilled business on the books of the United States Steel Corporation on March 31 aggregated 4,782,807 tons, or 130,094 tons less than that reported for Feb. 29. In February the unfilled tonnage increased 114,472 tons; in January 353,090 tons, and in December 76,755 tons. A year ago the unfilled business amounted to 7,403,332 tons, or 2,620,525 tons greater than on March 31 last. Following is the unfilled tonnage as reported by months by the Corporation, beginning with January, 1922:

	1924	1923	1922
January .....	4,798,429	6,910,776	4,241,678
February .....	4,912,901	7,283,989	4,141,069
March .....	4,782,807	7,403,332	4,494,148
April .....		7,288,509	5,096,917
May .....		6,981,351	5,252,228
June .....		6,386,261	5,635,531
July .....		5,910,763	5,776,161
August .....		5,414,663	5,950,105
September .....		5,035,750	6,691,607
October .....		4,672,825	6,902,287
November .....		4,368,584	6,840,242
December .....		4,445,339	6,745,703

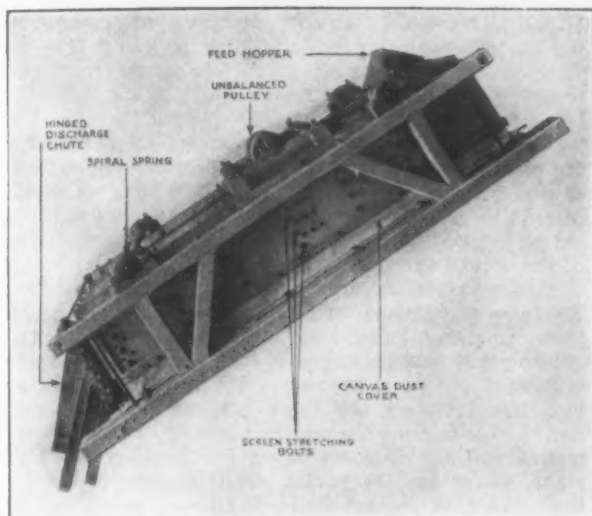
Four bids were submitted to furnish steel work for the Belmont Avenue viaduct in Youngstown, involving approximately 900 tons, as follows: Independent Bridge Co., Pittsburgh, \$104,420; McClintic-Marshall Co., Pittsburgh, \$104,797.50; American Bridge Co., Pittsburgh, \$109,177.50; Fort Pitt Bridge Co., Pittsburgh, \$111,547.50.



### Vibrating Screen for Fine Materials

A new vibrating screen for fine separation of by-products, coke, coal and limestone and other materials, a feature of which is the provision for producing the same intensity of vibration over the entire screening cloth, eliminating zones of varying intensity, has been placed on the market by the Link Belt Co., 910 South Michigan Avenue, Chicago.

In this design vibrations of the screen are produced by the action of an unbalanced pulley which is supported on the screening frame and is rotated at high speed. Uniform vibration of all parts of the screen surface, with the utilization of the entire surface for effective work, is claimed. The pulley is unbalanced by



Vibrating Screen. Vibrations are produced by action of an unbalanced pulley rotated at high speed. Uniform vibration of all parts of the screen surface is claimed

weights which may be varied to impart to the main screen box rapid vibrations of proper intensity and direction to screen the different materials. It is provided with a bushing and is oiled automatically by means of force feed lubrication.

The screen box is arranged for one, two or three screen decks, depending upon whether two, three or four sizes of material are produced. The screen cloth is mounted on removable frames carried within the box, each provided with means for stretching the screen cloth. The screen box is clamped rigidly to the hollow stationary shaft carrying the vibrator pulley, the vibrations being imparted directly to it and the screen cloth. By this arrangement the cloth is said to receive the same intensity of vibration over its entire surface, eliminating dead areas and zones of varying intensity.

The screen box with the feed hopper and discharge chute, is suspended from two hollow cross shafts, the ends of which are carried on flat spiral springs on the supporting structure. The box may be inclosed to confine the dust. The screen is belt driven.

### British Mining and Metallurgical Congress in June

An Empire Mining and Metallurgical Congress is to be held in connection with the British Empire Steel Exhibition at Wembley, England, on June 3 to 6, under the auspices of the Institution of Mining and Metallurgy, the Institution of Mining Engineers, the Institution of Petroleum Technologists, the Iron and Steel Institute, and the Institute of Metals, in conjunction with the Mining Association of Great Britain and the National Federation of Iron and Steel Manufacturers. Viscount Long of Wraxall, president, will preside over the main sessions and at the official banquet, which will be held by the courtesy of the corporation of the city of London, at Guildhall. Sir Robert Hadfield will act as honorary treasurer of the congress.

### Electrochemists at Philadelphia Next Week

The chief feature of the annual spring meeting of the American Electrochemical Society, to be held at the Bellevue-Stratford Hotel, Philadelphia, next week, April 24 to 26, is a symposium on "Recent Progress in Electrodeposition," scheduled for Saturday morning, April 26. The chairman is to be S. Skowronski, Raritan Copper Works, Perth Amboy, N. J. Mr. Skowronski will introduce the symposium with an address covering a review of progress in the electrolytic refining of metals, and among the papers scheduled are the following:

"Electrodeposition of Copper by the Union Minière du Haut Katanga," by H. Y. Eagle.

"The Electrolytic Tank House, Chile Exploration Co., Chuquibambilla, Chile," by C. W. Eichrodt.

"Electrolytic Silver Refining at Pachuca," by G. H. Clevenger.

"Addition-Agents in Tin Refining Electrolytes," by Edward F. Kern and Edward A. Capillion.

"Electrolytic Tin," by Charles L. Mantell.

"Electrolytic Refining of Tin," by J. R. Stack.

"Progress in Electrolytic Iron," by Donald Belcher.

"The Electrolytic Production of Beryllium," by B. S. Hopkins and A. W. Myer.

"The Metallurgy and Alloys of Beryllium," by E. A. Engle and B. S. Hopkins.

"Electrodeposition of Tellurium," by F. C. Mathers and H. L. Turner.

"An Attempt to Electroplate Tungsten on Iron," by C. A. Mann and H. O. Halvorsen.

Another interesting session will be a round table discussion at the luncheon hour on Thursday, April 24, on "Refractories for Electric Furnaces," with M. L. Hartmann, director research laboratory, Carborundum Co., Niagara Falls, N. Y., as chairman. Thursday morning is to be devoted to general papers on organic electrochemistry, with Friday morning devoted to a symposium on "Recent Progress in Electrodeposition."

Thursday afternoon is to be devoted to plant visitations among which are listed the following: Ajax Metal Co.; Disston Co.; Dodge Steel Casting Co.; Brown Instrument Co., and Wellsbach Co. An old fashioned planked shad dinner at Kugler's Old Mohican Club, Morris-on-the-Delaware, is scheduled for Thursday evening, April 24.

### Iron and Steel Institute's Technical Program

The annual meeting of the (British) Iron and Steel Institute will be held at the Institute of Civil Engineers, Great George Street, London, England, May 8 and 9. The following program of technical papers is scheduled for presentation and discussion:

"Notes on the Testing of Metal Strip," by L. Aitchison and W. L. Johnson.

"High Temperature Growth of Special Cast Irons," by J. H. Andrew and H. Hyman.

"Continuous Rolling Mills, their Growth and Development," by J. P. Bedson.

"Transverse Test Bars and Engineering Formulae," by G. S. Bell and C. H. Adamson.

"The Hardening of Silico-Manganese Steels," by E. W. Colbeck and D. Hanson.

"Recovery of Waste Heat in Open-Hearth Practice," by W. Dyrssen.

"Production of Large Crystals by Annealing Strained Iron," by C. A. Edwards and L. B. Pfeil.

"Some Effects of the Penetration of Arsenic and Sulphur into Steel," by W. N. Hindley.

"On the Forging Temperature of Steels," by K. Honda.

"On the Indentation Hardness of Metals," by K. Honda and K. Takahashi.

"Hardness of Electro-Deposited Iron, Nickel, Cobalt and Copper," by D. J. Macnaughtan.

"Experiments on the Brinell-Tensile Relationship," by A. L. Norbury and T. Samuel.

"Effect of Cold-Work upon the Density of a Iron," by H. O'Neill.

"Theoretical Considerations Respecting Certain Features in the Working and Efficiency of Reversing Regenerators," by J. Seigle.

"Plastic Deformation of  $\alpha$  and  $\gamma$  Iron," by F. C. Thompson and W. E. W. Millington.

"X-Ray Studies on the Crystal Structure of Steel," Part II, by A. Westgren and G. Phragmén.

The autumn meeting of the institute will be held in London, Sept. 4 and 5.

## NEW FORD STEEL PLANT

### Rolling Mill and Forge Shop for Electric Alloy Ingots—Other Additions at River Rouge

The new steel plant of the Ford Motor Co., Detroit, will be equipped with a 42-in. continuous blooming mill, a 32-in. billet mill, and a 14-in. 4-stand merchant bar mill. Alloy steel forging bars will be rolled from ingots made in a 50-ton Greaves-Etchells electric furnace which, with two 10-ton electric furnaces of the same type, has already been installed. The product will be formed into automobile parts in a new forging plant that is now being erected at the Ford company's River Rouge plant, where the steel plant will be located.

The blooming and billet mills, which are being built by the Morgan Construction Co., will be a radical departure in rolling mill design. Each mill will consist of four 2-high stands arranged in line. In the eight continuous passes through the mill stands an 8 x 12 in. ingot 55 in. long or about 1500 lb. will be reduced to a 4 x 4 in. billet. Later it is the intention to add two additional stands at the front end of the blooming mill; these will permit the reduction of 3000-lb. ingots. The plant will have an approximate capacity of 100,000 tons of ingots and billets per month. The layout provides for two units in addition to the 14-in. bar mill for reduction of the steel after delivery from the combination blooming and billet mills. These will be an 18-in. sheet bar mill and an 18-in. billet mill.

The Ford company plans by the building of a steel plant to effect further saving in its manufacturing processes by the elimination of the transportation of scrap produced in its plant to other steel mills to be reconverted into finished steel and shipped back to the Ford plant. Although much of the scrap produced is consumed in the Ford blast furnaces and foundry cupolas, much of this scrap material now finds its way to steel plants in other districts. With the completion of its

steel plant the Ford company expects to convert daily 1000 to 1500 tons of scrap into steel. The company has no definite plans at present for the building of an open-hearth plant or for any rolling mill units further than outlined above. Work on the erection of the steel plant has started and it is expected that it will be completed in about 18 months.

The Ford company now has a motor assembly plant 600 x 800 ft. under construction at its River Rouge plant. When this is completed assembled motors will be shipped direct from this plant to distributors instead of being sent to the company's Highland Park automobile plant and shipped out with other disassembled parts, as is done now. This will apply to motors for all cars except those distributed in Detroit and immediate vicinity. The other parts of the car will be shipped from the Highland Park plant as at present. Considerable saving in transportation will be effected by making the shipment from both plants. Adjoining the motor assembly plant a machine repair shop, 160 x 180 ft., is being erected.

The company is placing its new cement manufacturing plant in operation this week. This is equipped with one kiln with a daily capacity of 1000 tons which will convert the slag from one blast furnace into cement. A second kiln will be added later to handle the slag output of the second furnace.

Large extensions are being made to the Ford River Rouge power plant. One 30,000-kva. generator has been completed, being built in the Ford plant, another is being built and plans provide for four additional generators of the same capacity. When all the additional units are installed, the Ford company will have sufficient power to meet the requirements of its River Rouge plants, will supply some power for its Highland Park plant, power for the partial electrification of the Detroit, Toledo & Ironton Railroad and will probably have some power to sell. Electric locomotives are now being built at the plant for operation on the Detroit, Toledo & Ironton Railroad.

## REDUCED OPERATIONS

### Lull in Buying Reflected by Plants in Mahoning Valley Curtailing

YOUNGSTOWN, April 15.—Reduced steel buying is being more forcibly reflected in operating schedules of Mahoning Valley properties, which are being gradually forced to lower levels. Average production this week is the lowest of the year in the Valley. Makers exhibit no alarm over the situation, however, and believe the low point in the current buying lull has been passed.

Tod blast furnace in the Brier Hill works of the Youngstown Sheet & Tube Co. was blown out at the end of last week, while the Carnegie Steel Co. has suspended No. 3 stack in its Ohio works group and No. 3 furnace at Farrell, Pa. These suspensions curtail the active stacks in the Youngstown district to 32, of 45, with the probability that additional suspensions will occur before the end of the month.

The Sheet & Tube company is operating its properties in the Youngstown district at a 75 per cent average. Its active ingot production is curtailed this week to 65 per cent, from 70 per cent, maintained the week before. The Republic Iron & Steel Co. is melting at nine of 15 open-hearth furnaces, while its Bessemer department is operating at a largely reduced rate. Of 66 open-hearths in the Mahoning Valley, including the units of the Carnegie Steel Co., 43 are on the active list.

Production has been reduced by the Trumbull Steel Co., Warren, from 90 to 70 per cent. Until two weeks ago, the Trumbull company maintained production at a rate approaching normal.

Sheet mill schedules again show a definite decline, with 84 of 120 sheet and jobbing mills scheduled. The principal reduction this week is in the loss of the six units of the Thomas Sheet Steel Co., which have been rolling for three weeks. The Thomas company is maintaining its galvanizing department in action, however.

The Waddell Steel Co., whose mills are idle for bed plate and other repairs, expects to resume in a partial way next week.

Pipe mill schedules are holding close to normal, with 16 of 17 furnaces fired, 10 of the Sheet & Tube and six of the Republic Iron & Steel Co.

The American Sheet & Tin Plate Co. has placed its mills at the Farrell, Pa., plant on a five-day week basis.

### Steel Imports Into Japan

WASHINGTON, April 15.—Imports of iron and steel into Japan in March of this year were valued at 35,700,000 yen as against 27,065,000 yen in February of this year, and 10,461,000 yen in March, 1923, according to a cable received by the Department of Commerce from Acting Commercial Attaché Babbitt. Imports of machinery and parts in March of this year were valued at 13,200,000 yen, compared with 11,501,000 yen in February and 13,079,000 yen in March of last year. The total excess of imports into Japan in March was 185,500,000 yen, or about 1,000,000 less than the record established in February. The accumulative excess since Jan. 1 amounts to 405,477,000 yen. This is easily the largest adverse balance that Japan's trade has ever shown for a similar period.

Wage increases of about 5 per cent have been granted to about 55,000 railroad trainmen and conductors on 55 railroads in the territory west of Chicago. The advance will add \$5,000,000 annually to their payrolls. However, railroad brotherhood representatives have agreed to make concessions in the modification of certain working rules.

The Kalman Steel Co., Chicago, has increased operations at its Youngstown plant to a single 10-hr. day basis, and is operating at a normal rate. The Youngstown plant manufactures reinforcing steel bars.





## Activities of Former Armament Works

Germany Turning from Sword to Ploughshare—Development  
of New Concern to Make Motorcycles in Place of  
Guns and Shells

BY F. A. BRACKMANN

WITH the finish of the war the German state armament works, together with the private works in this line, had to cease the production of war implements and munitions. Altogether thirteen government works, which had turned out a great part of the requirements of the German army, had to stop suddenly with the production for which they had been thoroughly adapted. These works had been run purely with a view to military requirements. The consideration to safeguard manufacturing costs and to produce on a sound commercial basis did not enter into account to any great extent, as everything was subjected to the utility of the products for warfare.

At the end of 1918 all these works had, in compli-

ance with the Versailles Treaty, to abandon their old manufacture and scrap a great part of their plant. The scrapping of the plant has in some cases been carried to an extent which could not be defended on engineering grounds, and the directors complain bitterly that the demands of the Allied committees supervising these operations are causing the works unnecessary trouble and expense. The demolition of ordinary boilers and engines, machinery, lifts and transport appliances, etc., as they are found in every engineering shop, simply because they had been used in the manufacture of armaments, has considerably hampered the restarting of the new production.

Solving the problem to put these works on a new



Spandau Works, Now Devoted to General Steel Making and Malleable Castings, Automobile Parts and Miscellaneous Machinery

At Top of Page the Spandau Works Show at Right, with (at Left) the Haselhorst Works, where Motorcycles Are Now Made

commercial and engineering footing represents one of the finest achievements of German business organization after the war. The number of workmen, which totaled about 200,000, was drastically reduced and many who had been drafted to the works during the war went back to their native places. The political situation at that time presented also many difficulties and it was apparent that the works could not be closed and that the production of some commercial articles had to be started.

In 1919 the National Assembly decided to combine all the works in a new company—the Deutsche Werke Aktien Gesellschaft—which now ranks among the largest concerns in this country, employing about 40,000 men. It is constituted along the lines of an ordinary private share company. All the shares except those recently issued are in the hands of the government and the board of supervision is formed by members of Parliament, industrials and bankers.

During the first few years a large number of workmen were employed in destroying the old plant and machinery, which had to be made useless or dismantled. In spite of all the difficulties, of which financing was not one of the least, the works have now got into proper working order, production is more specialized, and the new lines of manufacture already are appearing on the market.

Two of the largest of the works are at Spandau and Haselhorst, in the suburbs of Berlin. These two works had been one of the principal centers for the production of armament and munitions. They are very favorably placed in regard to water transport, being situated on the confluence of the rivers Havel and Spree, and the accompanying airplane photographs show the many railroad lines affording transport facilities.

The Haselhorst works, which formerly produced gunpowder and rifles, has started the manufacture of motorcycles. Only one model is manufactured, and the output has been raised from 50 during January, 1923, to 700 during January, 1924, which is about one-third of the total German production of motorcycles. A production of at least 1000 per month is aimed at, which, according to the estimate of the management, will be achieved shortly. The manufacture has been put on entirely modern lines. In the assembling shop the frames are put on carriages running on rails on work benches, which go along the shop at a height comfortable to the workmen. Every man performs one or two operations and the spare parts are supplied to him from the stores situated along the side of the shop in

the order in which they are used, while the frame is traveling toward the finishing operation. At present Haselhorst employs about 4000 men.

The Spandau factories consist of two parts, the iron works and the engineering works, and employ about 7700 men. Here alone forty large furnaces and 17 boilers had to be pulled down, 450 special machines had to be scrapped and 1300 machine tools, including 50 large presses and steam hammers, had to be taken out of the works, and had either to be sold or, if this was impossible, to be scrapped.

The iron works have been the first to be brought into working order again. The steel works and the steel foundry have been modernized and the production of the latter has been brought up to 300 tons per month. In the steel works the fourth open-hearth furnace was built last year and the raw steel production, which has been increased by more than 50 per cent during the last two years, now totals about 6000 tons per month. A foundry for malleable castings has been erected, with a production of 70 tons per month. It is to be brought thoroughly up to date and further extensions are contemplated, as its production is far below the requirements of the concern. In the building up of this department, as the allied committee did not allow the erection of a converter, an open-hearth furnace is being used for this purpose.

One of the large halls has been fitted with modern machines for the cold and hot pressing of rivets, screws and nuts, and this shop has already a production of 12 to 15 tons per day. The raw material is at present supplied by the Siegburg works of the concern, but in future it is to be produced in the Spandau mills. These mills have been thoroughly overhauled and enlarged. A new mill has been started during 1923 and production of rolled material has been increased from 2300 or 3000 tons to 5500 tons per month.

For the cast iron requirements of the works, a foundry has been started which has already a production of 500 tons per month. This department is to be extended, as the demand of the concern for castings is considerably higher.

There are extensive machine shops in Spandau, and the production of finished goods includes automobile parts, shafts and cranks, office furniture, radiators, compressors, wood-working machinery, etc. A large hall also is devoted to railroad locomotive repairs. The second largest work of the concern next to Spandau is Kiel, the former naval dockyards, which has about 7000 employees at present.

### Seek New Uses for Slag

Betterment of present methods of utilizing the slag produced as a waste product of blast furnaces, and research looking toward the development of new methods of using it were discussed at a conference of the National Slag Association held at the Bureau of Standards, Department of Commerce, recently. In addressing the conference P. H. Bates, of the Bureau of Standards, called attention to the fact that slag is now used in Europe for making "Eisen Portland cement" which consists of about 35 per cent of ground slag and 65 per cent of Portland cement. He expressed the opinion that such use would ultimately develop in this country. Eisen cement is nearly as strong as Portland cement, he stated, and is also thought to be more resistant to attack by sea water and by alkali.

Following Mr. Bates, J. C. Pearson, chief of the bureau's cement section, told the conference about tests made at the Bureau of Standards on the properties of concrete in which slag is used as aggregate. The bureau finds that if the usual proportions are adhered to the concrete made with slag is less workable than that made with gravel, and is not so easily handled, but this difficulty can be avoided by using a larger proportion of sand. Strength tests are now under way, and results are expected by the middle of the month. The slag concrete is found to fill about 6 or 7 per cent less space for the same volume of aggregates as compared with gravel concrete, Mr. Pearson stated.

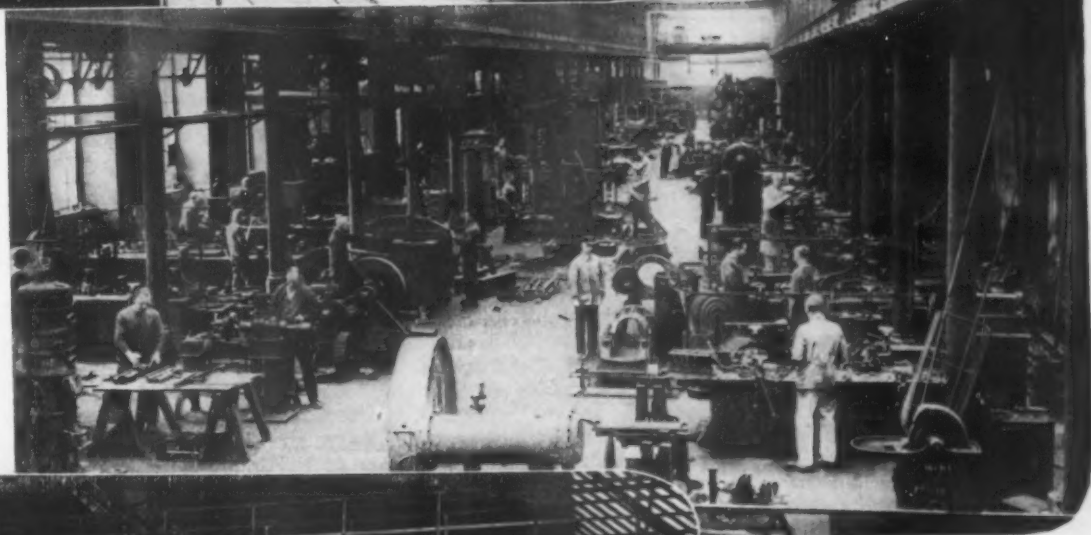
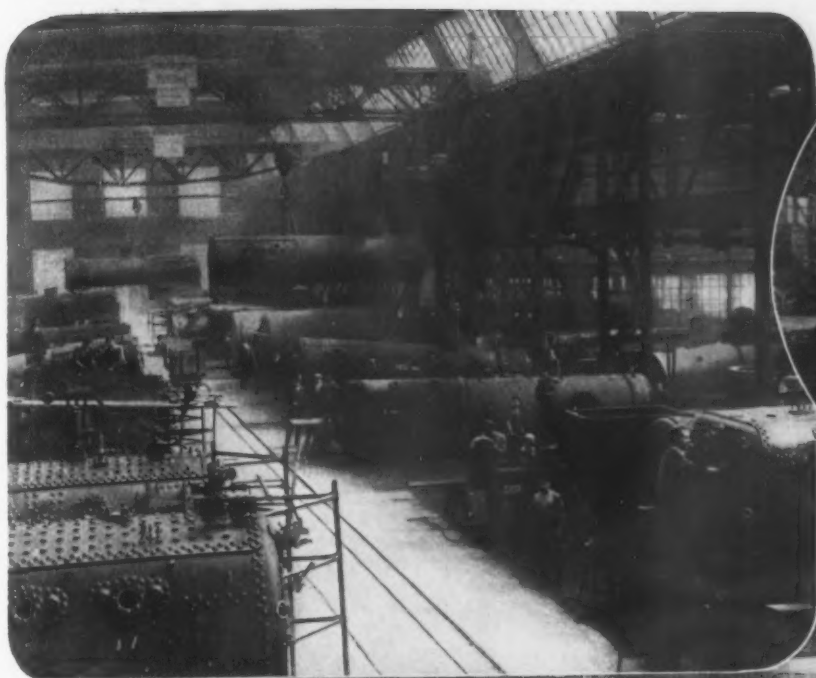
There are 20,000,000 tons of slag produced annually in the United States, Mr. Pearson said, and it sells for a small fraction of a cent per pound. It is usually not handled by the steel industry, but is sold by them to independent concerns who make it into useful products.

The meeting was also addressed by E. W. McCullough of the Chamber of Commerce of the United States, and R. M. Hudson of the Division of Simplified Practice, of the Department of Commerce.

Lists of possible buyers of iron and steel, building materials, hardware and agricultural implements have been compiled by the commercial intelligence division of the Department of Commerce. Mimeographed copies may be obtained from the Bureau of Foreign and Domestic Commerce by referring to title and file numbers. These include lists of importers and dealers in iron and steel for Greece, the list for which is designated as NE-5017-A, for Portuguese East Africa, EUR-10042 and for the Canary Islands, EUR-11056. Similar lists covering building materials are available for Ecuador, Costa Rica, the Canary Islands, Greece, Palestine and Portuguese East Africa.

B. Nicoll & Co., dealers in coal, coke, pig iron, steel, ores, and metals, announce the removal of their offices April 19 from the Singer Building to the Johns-Manville Building, Madison Avenue and Forty-first Street, New York.





Views in What Were Armament Works Prior to the Armistice. Upper left, boiler shop of the locomotive department. Upper right, casting ingots in No. 2 iron works. Center, one of the main bays of the engineering department. Lower left, charging open-hearth furnaces by suspended charging machine. Lower right, in the small parts forge shop

### New 22-Inch Geared Head Lathe

A 22-in. geared head lathe equipped with cabinet legs and clutch control at the apron, has been placed on the market by Morris Machine Tool Co., Cincinnati.

The single-pulley drive geared headstock is of the selective speed type, and provides 12 spindle speeds, from 10 to 350 r.p.m., which are obtained through sliding gears and a positive back gear clutch. All gears except the large face gear and the large back gear are of alloy steel, heat-treated and hardened. The headstock is oil tight and oil channels are provided to all bearings. The level of the oil in the headstock permits the gears to dip enough to assure adequate lubrication. The driving pulley is fully inclosed. It is provided with a friction clutch and brake operated by a lever at the apron and at the headstock, permitting the operator to start, stop and apply the brake without leaving his working position.

The machine may be arranged for motor drive, a 5-hp. 1200-r.p.m. motor being recommended. The motor is mounted on the headstock, the drive being through an endless belt with idler. The idler pulley and bracket

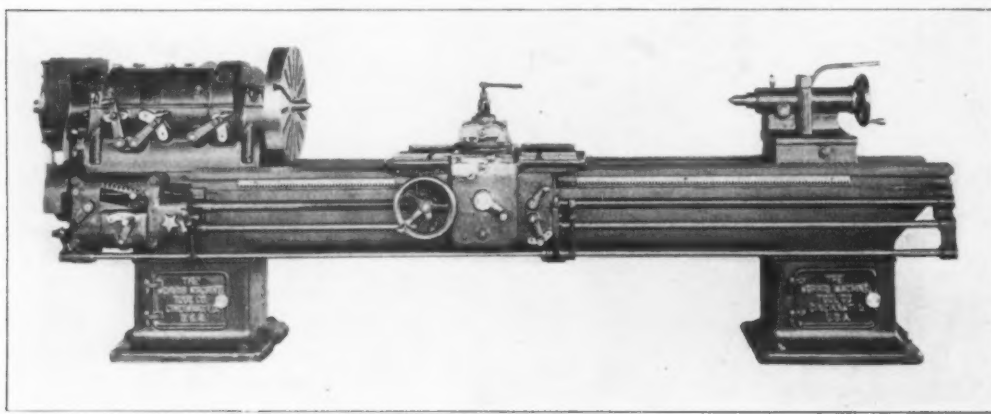
story reinforced concrete and steel building with a floor space estimated at 135,000 sq. ft. also is included in the additions.

The present works covers approximately seven acres of land and is devoted entirely to the manufacture of transformers of a capacity of 500 kva. and less. The new additions will now allow the company to carry out its long contemplated expansion in the transformer field and will form a self-contained unit for the manufacture of transformers of all sizes.

With the exception of the steel frame work which is being erected by the American Bridge Co., Stone & Webster, Inc., has charge of the building according to the plans and specifications and under the general supervision of Bernard H. Prack, architect and engineer. The new buildings will be ready for occupancy about Nov. 1.

### Portland Cement Production

March production of Portland cement, as reported by the United States Geological Survey, was 10,370,000 bbl., compared with 8,588,000 bbl. in February, 8,788,-



The Single Pulley Geared Headstock Is of the Selective Speed Type. The drawing pulley is inclosed, and is provided with a friction clutch and brake, operated by a lever at the apron and at the headstock. Splash lubrication is provided.

are mounted on the motor plate, making the entire unit self contained. Chain or geared drive may be applied also.

The quick-change mechanism provides 45 changes. The feed range is from 4 to 120 per in. and the thread range from 2 to 60 per in. The spindle is of 0.50 carbon hammered crucible steel and runs in phosphor bronze bearings, which are oiled from large reservoirs. The oil holes are fitted with handy oilers. The front bearing is 3 1/4 x 6 in. The hole through the spindle is 2 in. in diameter, and the spindle nose has five threads per inch and No. 6 Morse taper.

The carriage travels on a Vee at the front and a flat track at the rear and is gibbed to the bed at both front and back. The back of the carriage is drilled and tapped to receive the taper attachment. The compound rest swivel is graduated and is clamped by a single bolt through a dovetail clamping ring. The apron is a one-piece box casting. All bearings are cast integral and gears and shafts are supported at each end. Both cross and longitudinal feed clutches are operated by a single lever. An interlock prevents simultaneous engagement of thread and feed mechanism.

### Westinghouse Sharon Plant Extension Under Way

Several new buildings and additions to the Sharon, Pa., plant of the Westinghouse Electric & Mfg. Co. are under construction. The new buildings, which will be fireproof and of reinforced concrete and steel, will afford an additional floor space of about six acres and will be devoted chiefly to the manufacture of transformers of a capacity greater than 500 kva.

The new group of buildings will consist of several one-story structures, the largest of which will contain about 157,000 sq. ft. of floor space. It will be of very heavy construction with crane lifts of about 55 ft. Cranes of 75-ton capacity will be installed. A four-

000 bbl. in January, and 9,880,000 bbl. in March of last year. The production reported is the greatest for any March in the history of the industry and the first quarter's production of 27,746,000 bbl. is the greatest for any first quarter. It compares with 26,080,000 bbl. last year, which was the record up to that time.

Shipments of Portland cement amounted in March to 8,995,000 bbl., compared with 10,326,000 bbl. in March last year. Each of the three months of 1924 has reported smaller shipments than in the corresponding month of 1923, the total for the first quarter being 20,138,000 bbl. in three months of 1924, against 22,044,000 bbl. in three months of 1923. Stocks at the end of March are reported at 18,190,000 bbl., compared with 13,045,000 bbl. one year ago.

To study the circulation in a tubular boiler, A. C. Lippincott, district sales manager of the E. Keeler Co., maker of boilers, Williamsport, Pa., built a model proportioned along the lines of an actual boiler. The shell of the boiler is of pyrex glass, and the heads and tubes of brass. The casing is of planished sheet aluminum. For most experiments electric resistance coils were used as the heat source. Mr. Lippincott's experiments have shown that circulation is not as many think it is. Some results of his experiments have been described in the leaflet which can probably be obtained from Mr. Lippincott for the asking.

Rules for the safe handling of gas cylinders for holding oxygen, acetylene, hydrogen, etc., prepared by the Gas Products Association and reviewed at some length in these columns March 20, have been printed on a placard suitable for posting on bulletin boards and on shop walls. Copies may be had by addressing the association at 140 South Dearborn Street, Chicago, C. T. Price, secretary.



# Attorney-General and Trade Associations

The Question of the Right of These Organizations to Collect  
and Distribute Statistics to Be Taken Up Anew  
with Secretary Hoover



HARLAN FISKE STONE

WASHINGTON, April 15.—With Harlan Fiske Stone now established in the chair left vacant by Harry M. Daugherty, three things of importance to the business world are certain.

First, there will be no change in the attitude of the Department of Justice toward the prosecution of those trade associations which can be regarded properly as combinations for the purposes of fixing prices, restraining production and parceling out customers.

Second, the ruling of former Attorney-General Daugherty prohibiting such associations from collecting

statistics of their respective trades and distributing them to their members will be reopened.

Third, the new Attorney-General has entered upon his duties with a thorough knowledge of business and a sympathetic understanding of its problems.

These last two items at least represent a distinct gain for the business organizations of the country.

Because the President's newly named legal adviser had inherited one of the most delicate controversies affecting organized business, the writer went to see Mr. Stone because the business community is vitally interested in the position he will take on this controversy. The Attorney-General is a big man, suggestive of the chief quarry product of his native State. His friends say that in his professional capacity he is capable of amazing stretches of work. He reminds one more of Grover Cleveland than of any other man in public life, save that he is more cordial and genial and not so stern as Cleveland.

A distinguished lawyer, who has watched Mr. Stone from his earliest days at the bar, makes this estimate of him: "There is no lawyer in the country better qualified for this job. He is one of the soundest, sanest, most virile and best balanced men at the New York bar. There is no man in America to whom I would rather leave the settlement of these delicate business problems. He has a profound knowledge of the law. He is a man with an intensely practical turn of mind. He has been a member of two of the most important law firms in America measured by their relations to big business. He has no political past. This is most fortunate. For in these questions affecting business no factors will enter the discussion save the law and facts in the case. His mind will not be cluttered up with political considerations. He is fearless and will not hesitate to hold in favor of a business organization because some politicians may charge him with favoring big business."

The Attorney-General was reluctant to discuss for publication the subjects bequeathed to him by the late occupant of the Department of Justice. "If I were elected to a legislative job," he said, "I would be delighted to give you a statement about almost anything. But this job has nothing to do with the making of the laws. My business will be to enforce the laws as I find them, and this, of course, I shall do without fear or favor."

But Mr. Stone talked freely about himself and his philosophy as a lawyer. He knows business. He has been a director of a number of corporations. He has represented large interests. He has been a studious

observer of the evolution of American business. And he will approach the various problems growing out of the contact of business with the Department of Justice with a sympathetic understanding of the things American business men are trying to do.

It may safely be said that some of his first acts in his new post will be these:

First, He will personally examine all the important prosecutions now pending against various trades and groups of manufacturers because of alleged violations of the Sherman Anti-Trust law.

Second, he will reorganize the Department of Justice. This will be neither summary nor dramatic, but unostentatious and after mature examination of its affairs. In all likelihood he will add one more investigation to those already under way in Washington. But it will be his own investigation of his own department with a view to reforming it on efficient lines.

Third, he will make a thorough examination of the war fraud cases and the civil suits and criminal prosecutions growing out of war-time activities of the alien property custodian.

Fourth, name a new head for the bureau of investigation of the Department of Justice.

Fifth, reopen the subject of the right of trade associations to collect data about their respective trades and distribute this information to their members.

In doing this last service to business, Mr. Stone will take up the whole subject with Secretary of Commerce Hoover. As is well known, there was a very grave disagreement between the Department of Commerce and the Department of Justice over this issue. Between Mr. Stone and Mr. Hoover there will be a calm and a fruitful discussion of the matter that was not possible between Mr. Hoover and Mr. Daugherty.

## Sloss-Sheffield Sells Coal Lands

BIRMINGHAM, ALA., April 15.—The Sloss-Sheffield Steel & Iron Co. has sold to A. B. Aldridge and associates 18,000 acres of coal lands in Walker County, 40 miles west of Birmingham, consideration between \$300,000 and \$400,000. Mr. Aldridge and associates are now operating mines and selling the coal to the Alabama Power Co. for the big steam electric plant on the Warrior River and the new acreage taken over from the Sloss-Sheffield company is adjacent to the land being worked. The Sloss-Sheffield shut down drifts on the acreage in question during the strike two years ago and has not cared to operate the property since. Being separated from its main bodies of coal lands, the sale was considered advisable at a reasonable price.

"Foremen Training" is the subject of W. D. Stearns, Westinghouse Electric & Mfg. Co., who is to be the speaker at the April dinner and meeting of the Pittsburgh Foundrymen's Association on Monday evening, April 21. Dinner is to be served at the Margaret Morrison School, Carnegie Institute of Technology, and is to be followed by an inspection of the foundry of the School of Applied Sciences, where the meeting is to be held.

The Training of Men for Industry was the subject of an address April 4 by Prof. Paul Martyn Lincoln before the Rochester Engineering Society at its rooms in the Carnegie Building, University of Rochester. At the time of the first development at Niagara Falls, Mr. Lincoln was electrical superintendent and later had much to do with the design of the power line to Buffalo.

# Heat-Treating Furnaces Using Recuperation

## Effect of Pre-Heating the Air, Using Coal, Oil or Other Fuels—Applications to Annealing and Carburizing

BY PAUL J. NUTTING\*

THE use of recuperation as a means of fuel economy is daily finding more supporters in the iron and steel industries. Heretofore fuel has been cheap and its percentage of cost in the final product has been small and did not warrant any concerted effort at economical utilization. It is becoming necessary, however, to investigate all items entering into production costs and the problem of fuel economy is too vital to be overlooked.

In boiler rooms one has long found it both practical and economical to install economizers to utilize the waste heat which would otherwise be carried up the stack. In boiler operation it is customary to have flue temperatures lower than 700 to 800 deg. Fahr. and carrying with them only approximately 15 per cent of the total heat of the coal. Yet, even under these conditions, it is agreed that a saving may be effected which cannot afford to be overlooked, by the utilization of the sensible heat in the stack gases.

If, under the foregoing conditions, it is recognized to be good engineering practice to effect this recovery of fuel, then is it not more reasonable to recover the heat ordinarily lost in the flue gases from furnaces which, instead of the 15 per cent, constitute nearer 50 per cent of the heat supplied to the furnace? The greater part of this sensible heat from the flue gases can be returned to the furnace for work by using it to pre-heat the air for combustion.

There are many advantages derived from pre-heating the air by the waste furnace heat, chief among these, of course, being a saving in fuel. All the heat that can be brought back into the furnace by this method means that much less to be furnished by the fuel supply, and just that much less to be paid for by the manufacturer. Another important item is that by pre-heating the "combustion air," or where possible, both air and fuel, the flame temperature of that fuel is raised considerably. Since the greatest amount of heat utilized in a furnace is "radiant," and this heat varies as the flame temperature ( $H = T^4 - T_1^4$ ) one

can see very readily that by increasing this temperature the efficiency of heat transmission to the work will be increased.

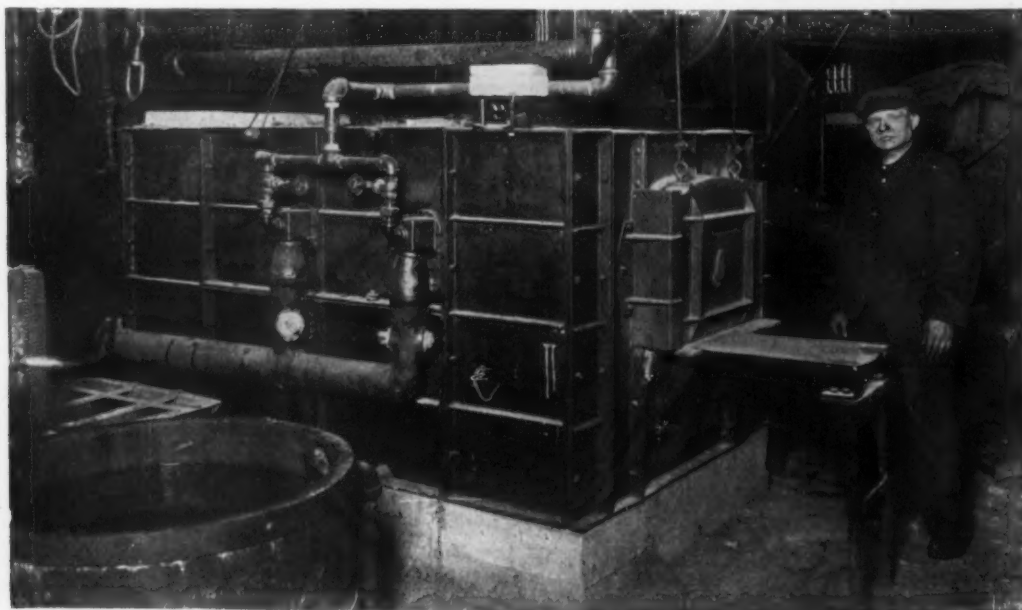
For example, the maximum theoretical flame temperature available with coke oven gas using cold air for combustion is 3550 deg. Fahr. However, if we pre-heat the air used for combustion to 1200 deg. Fahr. this temperature is raised to 4064 deg. Fahr. A great advantage is derived, using oil fuel, in that the atomization is much nearer being complete, resulting in a most efficient fire.

Those who attended the steel treaters' convention in Pittsburgh, in October, 1923, will recall the exhibit of the Combustion Utilities Corporation. In this two heat-treating furnaces were placed side by side, duplicates in all cases, except that one had recuperator sections for preheating the air and in the other they were omitted. Flow meters and recording temperature meters were used on the installation and air pre-heats taken. The meters were installed on an instrument board in plain view. The recuperative furnace showed never less than 30 per cent, and averaged 35 per cent saving over the non-recuperative furnace. Pre-heats as high as 1600 deg. Fahr. were obtained.

A number of installations have been made with a recuperator furnace for carburizing. In one installation a test of four days' duration was run which showed a gas consumption per box, using city gas, of 1460 cu. ft., the cost per box being 0.995c. On the same duration and using a type of furnace not equipped with recuperators, the gas consumption was 2525 cu. ft. and the cost per box \$1.717. This shows a gas saving of 42 per cent in favor of the recuperative furnace.

In a similar installation these results were very closely checked. A non-recuperative furnace was replaced by the recuperative type. This also was a carburizing operation, the fuel consumption per lb. of box plus stock on the original furnace being 3.17 cu. ft. and per lb. of stock alone 13 cu. ft. The fuel consumption was reduced on the recuperative furnace to 1.95 cu. ft. per lb. of box plus stock and to 4.54 cu. ft. per

\*Combustion Utilities Corporation, Toledo, Ohio.



A Carburizing Furnace Using Recuperation with Gas as a Fuel



lb. of stock alone. This represents a saving of 38 per cent in fuel alone. In this case a saving of 25 per cent in time was realized, producing the same results in terms of product carbonized.

Recuperation is just as applicable to oil fuels as gaseous. One illustration shows an installation of a utility recuperative oil-fired furnace used for annealing small steel castings packed in cast iron boxes of spent carbon. This furnace is of the over-fired type with hearth dimensions 45 in. x 7 ft. 6 in. and 31 in. to the spring of the arch. Previous to the installation of this furnace three non-recuperative types were used on this operation. Result shown on these furnaces was 0.042 gal. of oil per lb. of stock alone, or 0.016 gal. per lb. of stock plus boxes. After the recuperative type was



A Recuperative Oil-Fired Furnace for Annealing Small Steel Castings

installed a test covering a considerable period of time showed a fuel consumption of 0.027 gal. per lb. of stock or 0.01 gal. per lb. of stock plus box. This, then, shows a decrease in fuel consumption of 35 per cent and an increase in production of 60 per cent was made at the same time.

For treating heavier material than that in the foregoing examples, a car type or car and ball type furnace is preferable. This provides ease of charging and minimizes time and labor required. A furnace of the car and ball type is shown in another illustration and is used for annealing and drawing heavy die blocks, a charge of 9000 lb. being treated at one time. This furnace is equipped with recuperators and is so designed that hot gases surround the hearth, preventing excessive strains, but having the maximum temperature above the hearth where it is most desired from an efficiency standpoint.

Excellent results have been obtained on this installation, the average gas consumption per pound of charge being 2.6 cu. ft. of 540 B.t.u. city gas. This included a bringing-up period, a soaking period and a cooling period. A thermal efficiency of 17.7 per cent was obtained.

Some foreign engineers, who were driven to an extensive study of this problem by the scarcity of fuel in their country, seem to be astonished to think that the American, who is supposed to be an object of efficiency, should give so little consideration to fuel conservation. However, during the last few years a great forward stride along these lines has been made, thanks to the

cooperation of the furnace builders and alloy manufacturers, the latter developing recuperator material of such resistivity that it could be used successfully in high temperatures and the furnace builders utilizing this material in a highly efficient heat exchanger and properly adapting it to a well-designed furnace.

### Reducing Cost of Business to Be Major Topic at Management Convention

Reducing the cost of doing business has been selected as the major subject of the eleventh national convention of the Society of Industrial Engineers, to be held at the Hotel Statler, Buffalo, April 30 to May 2.

"What is Needed from the Management Point of View," a paper to be presented at the opening session by Benjamin A. Franklin, vice-president Strathmore Paper Co., Mittineague, Mass., will be discussed by Ansel G. Coffin, Babson Statistical Organization, Philadelphia. Two papers at the evening session on reducing the cost of selling and of manufacture, respectively, will be discussed by A. S. Cunningham, production manager Hadfield-Penfield Steel Co., Bucyrus, Ohio, and J. S. Shaw, Hercules Powder Co., Wilmington, Del.

Three simultaneous debates on subjects pertaining to production management, accounting and personnel methods have been arranged for the second evening session. The debate of the production managers' group will be on the resolution: "That Production Control Should Be Installed By a Consultant," the affirmative to be argued by F. J. Knoeppel, Chicago, and F. W. Van Ness, New York. The negative side will be presented by Clifton Reeves, industrial engineer, Willys-Overland Co., Toledo, Ohio. The accountants' group will debate the resolution: "That Repairs and Maintenance on Plant and Equipment Should Be Charged To the Reserve For Depreciation Rather Than To Current Operations." A resolution: "That Executives Should Be Promoted On the Basis Of Rating Plans Similar To Army Tests" will be debated by the personnel group, the affirmative to be presented by W. S. MacArthur, Chicago, formerly of the Personnel Division of the U. S. Army. Arthur L. Mann, supervisor of training, Eastman Kodak Co., Rochester, and C. B. Gordy, University of Michigan, will present the negative side.

A paper dealing with the part of the personnel manager in cost reduction will be presented and discussed at the morning session, May 2. At the same session a paper on "The Reduction of Costs Through Industrial Engineering" will be read by Carle M. Bigelow, Cooley & Marvin Co., Boston.

At a session under the auspices of the committee for the elimination of unnecessary fatigue a paper on "Illumination—A Fatigue Factor" will be read by Ward Harrison. This paper will be illustrated by equipment and stereopticon slides. George H. Shepard, Purdue University, chairman of the committee, will preside, and Frank B. Gilbreth, consulting engineer, Montclair, N. J., will lead the discussion.

Plant inspection trips will be a feature as heretofore. Those to be visited include the Lackawanna Steel Co., American Brass Co., American Radiator Co., Pierce-Arrow Motor Car Co., the Larkin Co., and the Niagara Falls Power Co. A scenic trip around Niagara Falls, with luncheon at the Falls has been arranged for the morning and afternoon of May 1. For those who do not desire to visit the Falls, plant inspection trips at Niagara Falls and Tonawanda will be arranged.

The March wage disbursement of \$7,022,669 by Youngstown industries was \$172,067 less than the preceding month. During the first three months, the payroll at Youngstown, chiefly by iron and steel companies, was \$20,657,655, comparing with \$17,456,277 distributed in wages during the corresponding period in 1923. The first quarter disbursement was at the annual rate of \$82,600,000, comparing with an actual payroll of \$78,126,000 in 1923.

## OHIO PLANTS FAIRLY BUSY

### Some Curtailment by Automobile Companies— Survey of Southern Part of the State and Northern Kentucky

CINCINNATI, April 14.—There has been little change in the industrial situation in southern Ohio during the past few weeks. Some plants manufacturing automobile accessories have been obliged to curtail somewhat since April 1, due to the lessening of production of passenger cars, but this has been offset in some cases by increased activities in other lines, and as a consequence the general situation remains practically as it has been.

Labor conditions in the district are satisfactory. In some cases there is a surplus of skilled and unskilled labor, but reports generally agree that the labor situation may be classed as easy, without a surplus or shortage.

In Cincinnati, there has been little change in manufacturing activities. Some of the lamp companies have curtailed production. Machine tool plants are running at about the same rate as has been the case for several months, and reports indicate an increased production in some cases since the first of April. Other metal-working industries are maintaining the rate of operations of the winter months, and at the present time indications point to a good rate of operations through April and May.

Metal-working plants in Hamilton, both machine shops and foundries, are enjoying fair business, and are maintaining operations as before.

At Middletown the American Rolling Mill Co. is operating both its Central and East Side works at capacity, and expects to continue full operation indefinitely.

#### Dayton Foundries

Dayton foundries report conditions fair, and operations being maintained at a steady rate. There has been a slight falling off in the production of malleable castings during the past two weeks, but gray iron foundries report a slightly increased business. Tool and die shops are getting a fair share of business, and machine shops are running about 60 per cent. Manufacturers of pumps are running full time.

Springfield manufacturers report business fair. One boiler manufacturer is so far behind on orders that a 24-hr. day has been established in this department. Turbine and water wheel manufacturers are running full time. Agricultural implement manufacturers are working overtime three nights a week to keep up with orders, mostly for export. Motor truck manufacturers report a plentiful supply of orders both for domestic trade and for export. Piano plate manufacturers report business as quiet at present, but indications brighter for the future. Machine tool manufacturers report an increased number of orders since April 1 and judging from the number of inquiries further increased business is expected. Gas engine manufacturers report a slightly improved demand for their product, and full operation is reported at the plants of the road roller manufacturers.

#### Activity at Columbus

At Columbus the American Rolling Mill Co. has two blast furnaces in operation, but the plant of the Carnegie Steel Co. is closed. Steel castings manufacturers are running 50 per cent of capacity, and this rate of operation will be continued until June 1 with the present orders on hand. Chain manufacturers are getting a fair share of orders. Manufacturers of bolts and nuts have been operating full time, but a dropping off in demand from the automobile industry may make it necessary to curtail operations slightly. Forging plants have been busy, and gray iron foundries report a fair amount of orders. Stove manufacturers are preparing for a good season. Malleable castings manufacturers, who have been doing a record business, have curtailed operations somewhat as automobile manufacturers have held up shipments for the time being. Mining machinery and equipment has been in

light demand, but shops making a specialty of this trade have taken on other lines and are operating plants at a fair rate. The labor supply is easy, and common labor is fairly plentiful. There is, however, no over-supply of skilled mechanics.

In the southeastern portion of the State, conditions are unchanged from the past two or three months. The Zanesville works of the American Rolling Mill Co. is operating at capacity. At Portsmouth the Whitaker-Glessner works of the Wheeling Steel Corporation is operating approximately 80 per cent in all departments, and the blast furnace of the company is in operation. In Jackson County two silvery furnaces are in operation with one down, and at Wellston cement plants are operating full time, but blast furnaces are all out of blast.

#### The Ironton District

In the Ironton district, three out of five blast furnaces are blowing, the Marting Iron & Steel Co. having two in blast and Belfont Steel & Wire Co. one. The latter company's wire and nail mills are operating one shift each day. The coke plants at Ironton and Portsmouth are in full operation.

Conditions in northern Kentucky are encouraging. The Ashland works of the American Rolling Mill Co. is being operated practically full, with partial operations now being carried on in the new mills of the company. The company has one of its blast furnaces in operation. The Norton Iron Works is operating in its nail department, but its blast furnace is out. A 50 per cent operation at the Ashland Steel Co. is being maintained. At Newport, the Andrews Steel Co. and the Newport Rolling Mill Co. have been maintaining a 75 per cent operation for some weeks, and expect to continue. Other metal-working plants in the northern Kentucky district have been enjoying a fair share of the business going, and are optimistic regarding the prospects for a good year's business.

### British Empire Steel Corporation Activities

Operations of the plant of the British Empire Steel Corporation, Sydney, N. S., were practically uniform throughout the year 1923, with the exception of the time the plant was closed down due to labor troubles. When the plant was in operation there were three blast furnaces producing pig iron and the rest of the plant was engaged on the various products which the corporation produces. The production of pig iron during the year amounted to 277,681 tons, as compared with 120,789 tons in 1922. The production of steel ingots at the Sydney plant during 1923 reached a total of 287,988 tons, as compared with 139,549 tons in 1922. The semi-finished steel further manufactured at the New Glasgow, N. S., plants of the corporation amounted to 63,220 tons as compared with 31,439 tons in 1922. The steel plant at Sydney mines was idle all year.

During the year 1923, the British Empire Steel Corporation produced 748,387 gross tons of iron ore at its Newfoundland mines; of this amount it shipped 208,985 tons to Germany; 65,575 tons to England; 49,840 tons to the United States, and the rest, 413,174 tons, was shipped to the company's plant at Sydney, N. S. The shipments of ore to Germany during the year 1922 reached a total of 724,862 tons. The reduction during the past year was a result of the French occupation of the Ruhr, and the inability of the German customers to receive and pay for the ore.

### Proposed Scrap Tariff Cancelled

WASHINGTON, April 15.—The Interstate Commerce Commission last week ordered cancellation of tariffs which proposed the establishment from East St. Louis, Ill., of a proportional rate of \$2.27 per gross ton, restricted to apply on shipments of scrap iron originating at Texas, common points, and destined to Terre Haute, Ind. Had the tariffs become effective, they would have resulted in an increase of 38c. per ton on shipments of scrap material from Texas points to the Terre Haute territory.



## COST OF BUILDING DOUBLED

Labor and Materials Share Equally in Rise in Last Ten Years—Labor Charge Now at Peak

Building costs in the United States, in the midst of the country's greatest construction boom, have doubled in the last ten years, according to the National Industrial Conference Board. Costs of labor and of materials stand at the same increased levels, for the first time since 1920. The investigation covered the leading American cities, and took in all the crafts and the leading elements in building material. Wage figures were based on Government and other reports annually

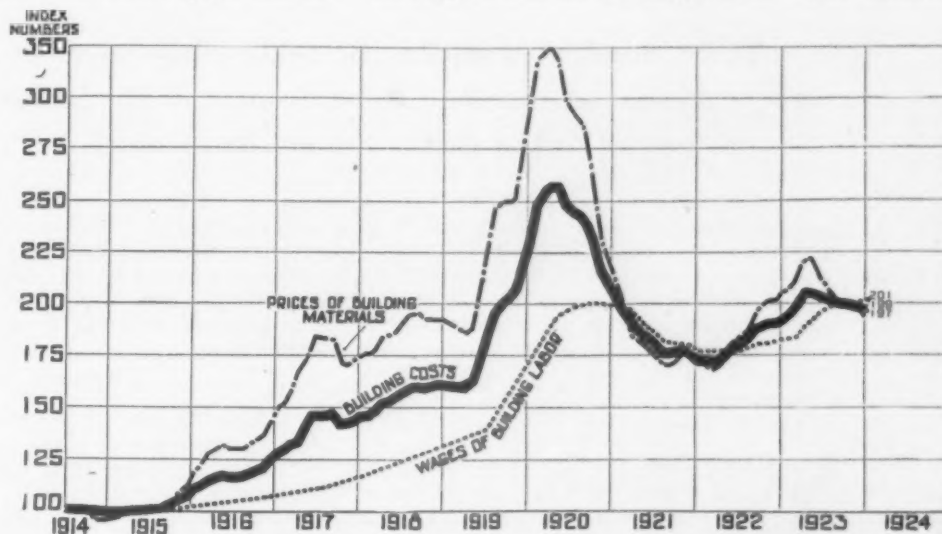
per hr., and the average for all hodcarriers in the cities surveyed is more than 90c. per hr. The same sustained high levels are being experienced also by plumbers, electricians, carpenters and sheet metal workers.

### Building Materials

Prices of building materials until recently more than kept pace with the rise in wages. From 1915 to 1920 the prices of materials increased more than twice as much as wages. In 1921, however, they fell to approximately the same levels as wages, and during the past year the present 100 per cent increase (over 1914) in both was established.

Cast iron pipe is the most expensive commodity in construction, as compared with 1914 wholesale costs, showing an increase of 306 per cent. Other materials

Changes in Building Costs Based On July, 1914, as 100. Labor is now slightly higher than building materials and both are double the pre-war level. The diagram is copyrighted by the National Industrial Conference Board



in May from 1914 to 1920, and monthly since August of that year.

Among the separate trades, plasterers and bricklayers receive the bulkiest pay envelopes in practically all cities. Bricklayers get \$1.25 per hr. in 50 cities, and plasterers in 44 cities, while in St. Louis the rate is \$1.75 per hr. Lathers and masons get \$1.50 per hr. in Houston, Tex., the same rate being received by roofers and hoisting engineers in New York. Masons get \$1.25 per hr. or more in 28 cities, lathers in 12 cities, hoisting engineers in seven cities and roofers in four.

The hodcarrier, once figuring prominently as the butt of cartoon and caricature, now earns up to \$1.25

which are more than double the figure of ten years ago are Douglas fir, lime, white pine, white lead and turpentine.

Sheet copper and copper wire show the least advances over 1914—only 4 and 5 per cent. Pine flooring and structural steel show great reductions from the peak period, steel beams having fallen from an index of 480 to 194, a drop of 60 per cent.

The present general trend of building costs, taken as a whole, is a tendency downward for materials, and a rising tendency in wages. There was nothing adduced in the survey to indicate appreciable reductions in building costs in the near future, conditions in the United States as a whole being considered.

## Conflicting Trends in March Construction Record

The March building record shows a variance in trend as between the different sections of the country, according to F. W. Dodge Corporation. The contrast is

February and 15 per cent over March of last year. New York City's March total was \$131,611,100, eclipsing all previous records, with an 83 per cent increase over February, and an increase of 130 per cent over the previous March. If the New York figures are deducted from those of the 36 states, there is shown in the

	Millions of Dollars	Per Cent Increase		Residences	Commercial	Percentage of Total		
		Over Feb.	Over March, 1923			Educational	Other Public	Industrial
New York and northern New Jersey.....	168.7	56	77	64	20	7	3	2
New England.....	30.8	74	16	53	17	7	..	8
Middle Atlantic.....	36.4	36	-34	55	9	11	11	7
Southeastern States.....	46.9	15	24	46	12	10	15	..
Pittsburgh District.....	50.8	44	-17	40	15	..	16	13
Central West.....	91.2	38	5	43	9	9	20	4
Northwest.....	8.6	57	-33	27	10	12*	38	..

Minus sign signifies a decrease.

\*Designated as social and recreational projects.

particularly great as between New York City and the rest of the country. March contracts in the 36 Eastern States (which include about seven-eighths of the total construction volume of the country) amounted to \$433,340,300. This was an increase of 44 per cent over

remaining figures a decrease of 5 per cent from last March instead of an increase. A tabulation of the records here made shows how large a factor is residence construction and how small the building of factories.



## Bethlehem Park—An Industrial Village

Three Hundred Houses to Be Sold to Employees on Easy Terms—Attractive Layout Planned, With Gardens, Parked Boulevard and Playground

FOR the purpose of enabling employees of the Lackawanna plant of the Bethlehem Steel Co. and its affiliated companies to purchase and own their own homes in a convenient locality and in good surroundings, the company has entered into an arrangement with the Bethlehem Land & Improvement Corporation for the building and sale of 300 houses in the city of Lackawanna, directly south of Smoke's Creek and east of Hamburg Turnpike. The area involved is 63 acres and the development has been named Bethlehem Park.

This entire development will cost about \$1,250,000 and will include paved streets, sidewalks, sewers, water, electric lighting, trees and shrubbery planted along each

street and all essential features to make it one of the most attractive and livable sections in the city of Lackawanna. A park and playground, centrally located, has been set aside by the company for the employees, and provision has been made for the necessary stores and amusement places to make it a complete community.

### Types of Houses

Fifteen different types of houses of various sizes, ranging from four to seven rooms, have been planned. This not only provides a diversified and harmonious appearance to the community but affords a wide selection, according to individual tastes and needs. The



General Plan of the Area Developed in Bethlehem Park. The top of the map is east. The Lackawanna plant of the company lies to the west of Hamburg Turnpike, at bottom. Buffalo is some distance away, at the left. The portion designated for stores, etc., is at Jackson Avenue and Spruce Street, at center of left side

At Top of Page Is a View Along Madison Avenue, Looking East from Walnut Street, Before the Trees Were Planted



general size of the lots is 35 x 110 ft., except corner lots, which are 40 x 110 ft. Each yard in the rear of the houses will be inclosed with a substantial fence, affording each family sufficient room for a garden and garage.

Every house in the development is to be a single detached house of frame construction; all to have paved cellars under the entire house, and equipped with a warm-air furnace with registers in all rooms. Every house will have a bathroom with bath tub, toilet and wash basin. Electric lights are provided in every room and the bedrooms have ample closets. Each kitchen is equipped with a modern sink, drain boards, cupboard and hot-water tank. Every house has an 8-ft. wide

The houses and lots are sold outright to the employees, subject to the necessary mortgages, the company retaining no rights of any kind in the houses or land as long as the mortgage and other obligations are met. The houses are sold on the basis of an initial cash payment of 10 per cent of the purchase price, and monthly payments ranging from \$30 to \$40, depending on the type and location of the house.

All mortgages carry interest at 6 per cent. The monthly payments as fixed will cover: Interest on mortgages, fire insurance premium, all taxes on the property, life insurance premium and payment on account of mortgage reduction. The life insurance policy is so drawn that, in the event of purchaser's death, his wife



Above Is a General View of the Development, Looking Southeast from the Northwest Corner of the Property. The land office is prominent near the center

Below Is a Row of Cottages Along Hamburg Turnpike—the West Boundary of the Park and the Main Means of Approach from Buffalo Both by Street Car and Automobile. This shows the diversified types of architecture used



porch, and concrete walks to both front and rear entrances.

All streets, except Madison Avenue, are 50 ft. in width, Madison Avenue being 86 ft. wide with two 16-ft. paved roadways on either side of a 24-ft. grass and shrubbery area. All other concrete roadways are 22 ft. wide. Concrete sidewalks are 4 and 5 ft. wide, according to location. Houses are set back 25 ft. from the property line. The business section will be located at Jackson Avenue and Spruce Street.

#### Cost of Houses

The houses and lots will be sold to the employees of Bethlehem company and affiliated companies at actual cost; prices ranging from \$3,600 to \$4,500, depending upon the size of the house and its location.

In addition to a direct saving in cost due to quantity production, the elimination of the customary architects' fees, and a large proportion of the usual cost of financing, selling expense and overhead, great economies have been effected by the company through intelligent planning and efficient engineering. These savings assure the prospective purchaser a home well under prevailing costs of similar houses elsewhere, the reduction in some cases running as high as 20 per cent.

or family will be relieved of monthly payments and will own the house, subject to the customary first mortgage.

#### Rewarding Workers for Suggestions

Rewarding workers for suggestions is practised in plants of the General Electric Co. Of the 8078 suggestions reviewed by the various committees in the works, 1752 were accepted. Awards ranging from \$1 to \$500 were paid to those whose suggestions were accepted, making a total of \$22,988 paid out in cash awards during 1923.

Briefly, the operation of the suggestion committees is as follows: Suggestions for improvements are focused through a small committee in each works. This committee investigates the suggestion, passes upon the merit of it, and makes the award to the man or woman who made the suggestion, or explains why the suggestion cannot be effectively adopted. In most cases the award can be made within a period of a few weeks after the suggestion is received; where it is necessary to put the suggestion into practice in order to determine its value, a longer time must elapse. The nature of the suggestions covers a wide range.

## BOOK REVIEWS

**Manpower in Industry.** By Edward S. Cowdrick, x + 388 pp., 5 1/4 x 8 in. Henry Holt & Co., New York, 1924. Price, \$3.25.

Since the close of the war, the new science of industrial relations has been thoroughly tested. Through prosperous and depression periods, the underlying principles of human relationships in industry have become more clearly understood. Mr. Cowdrick's purpose is to set forth these fundamental precepts and the practical approach to the labor problem through the various forms of personnel administration. Business executives and labor managers will find much that is fresh and stimulating in the discussion of the technique of industrial administration. The research student, however, will be disappointed in not discovering more profound treatment of the essential problems. Nevertheless, the book should be educative to general readers who are not acquainted with the scope of labor administration in progressive American corporations.

After an excellent introductory chapter on the problem of human relations in industry, the next 70 pages, devoted to a brief review of the rise of labor, the American labor movement, the capitalistic system, labor organization, labor supply and immigration, are not inspiring to the average reader. This discussion detracts from the excellent presentation of the methods of personnel administration which follows.

Mr. Cowdrick ably states the fundamental need for industrial justice when he says, "Whatever may be the method adopted for handling discharges, the seriousness to the worker and to his family of the loss of the job should not be overlooked. In many instances, discharge means poverty for the entire family. It may mean that the wife must go to work, and the children be taken from school. It is important, therefore, as a matter of fairness that discharge should come only for just cause and after the workman's side of the case has been given full hearing."

The principles, form, and administration of employee representation are clearly depicted. The author does not believe that industrial councils and organized labor are antithetical when he says, "There are precedents for the operation of an employee representation plan side by side with a union contract. Under such circumstances, the functions of the works council naturally are subject to the provisions of the union agreement, and the national organization is likely to reserve to itself the supervision of the more general and more fundamental subjects, such as wages and hours. . . . It is true that in the past, and down to the present, unions have generally opposed works councils. This has been due to a variety of causes. The very fact that many of the most conspicuous examples of representation have been in industries which withheld union recognition would have been enough to incline many leaders to hostility. Then some leaders have believed, or affected to believe, that one purpose of representation was to destroy organized labor. Perhaps, too, there has been a fear that representation, if wholly successful, would make unions unnecessary."

Mr. Cowdrick believes the power of the representatives should be real, not imaginary, and should be clearly defined. If restricted to advisory functions, the employer can only expect a limited interest of the working force, and should never classify the plan as "industrial democracy." Mr. Cowdrick is opposed to industrial representation for salaried or clerical workers, because of the danger of erecting artificial barriers between the higher and lower forms of management. The author believes that a capable personnel officer with a certain amount of authority can do more to clear up misunderstanding and grievances among "white-collared" workers. Summing up, Mr. Cowdrick strikes the keynote of industrial representation when he says, "Without an honest purpose on the part of the employer to deal fairly with his workpeople, and to make his labor policies such that they will bear the light of

publicity and mutual intelligence, the most carefully wrought out plan of representation is under a handicap so severe that it almost may be said to be doomed to failure."

Mr. Cowdrick finds that while employee representation has not ended strikes it has averted some local strikes that otherwise would have occurred, and certainly has mitigated the ill-feeling and violence of many industrial conflicts. Turning to the positive results of employee representation, Mr. Cowdrick finds on every side evidence of progress. If the new order of industrial relations does not end the strikes, he says, it has made long strides toward the elimination of the fundamental causes of strikes—bad conditions and mutual distrust. The rights of the humblest toiler have come to be regarded with scrupulousness formerly unthought of. The author also points out the improvement in physical conditions, which has resulted from the efforts of works councils. Interesting examples drawn from practical experiences are cited.

Other chapters deal with foreman and employee training, medical service, accident prevention, service features, housing, wages, profit sharing, stock purchase plans, insurance, benefit associations, pensions, and the organization of an industrial relations department. The discussion is interspersed with many practical illustrations which should prove valuable to the labor executive. Particularly worthwhile is the review of the necessity of a progressive public relations policy on the part of an industrial corporation, and the connection of this policy with sound labor administration.

At the end of each chapter, supplementary reading references from both conservative and liberal sources are presented.

**The Modern Iron Foundry.** By Joseph G. Horner. Pages 255, 5 1/2 x 8 1/4 in.; illustrations, 146. Published by the Oxford University Press (American Branch), New York. Price, \$5.

This is not a very valuable addition to foundry-practice literature, especially for American readers, forced to excellence in molding and casting by the high price of labor necessary in forging, and aided by the excellence of our native irons. The many purely local expressions and names, for instance those of special brands of pig and sources of sand, have no interest for the American reader. The work would have been much more valuable if there had been micrographic illustrations of sections of pig and castings. The illustrations that are given are scratchy.

Apparently, converters have not reached the author's ken; nor has the electric furnace. The recommendation of such an awful liar as the anemometer for measurement of blast pressure is hardly commendable. Bottom-pouring ladles and skimming ladles are omitted. The use of iron cores, necessary in many kinds of castings, for instance in making malleable iron links and in certain furnace-pots with air pockets, seems unfamiliar. Apparently there are in Great Britain no core machines of the stuffing-box pattern, and the author does not warn the core maker against the danger of getting fins on cylindrical cores made in halves and pasted together, which renders them unfit for making shells. Making gear molds by the use of segmental toothed rim patterns placed by circles on the sand bed is not to be recommended.

Such words as "sullage" are unfamiliar here; and few founders would recognize a gate under the name of "git." Jarring machines receive not the slightest mention. Die casting properly deserves no place in a work for foundrymen. Faults in castings are very fully illustrated and their causes given. Malleable work is left out, as is semi-steel.

Chilling is barely mentioned, and the retarding of cooling by covering portions liable to cool too suddenly for others with which they are in connection, omitted.

Altogether, before writing this book, the author should at least have studied the various available American and German works on the subject; or better yet, have visited a score or more of typical successful American foundries of various kinds.

ROBERT GRIMSHAW.

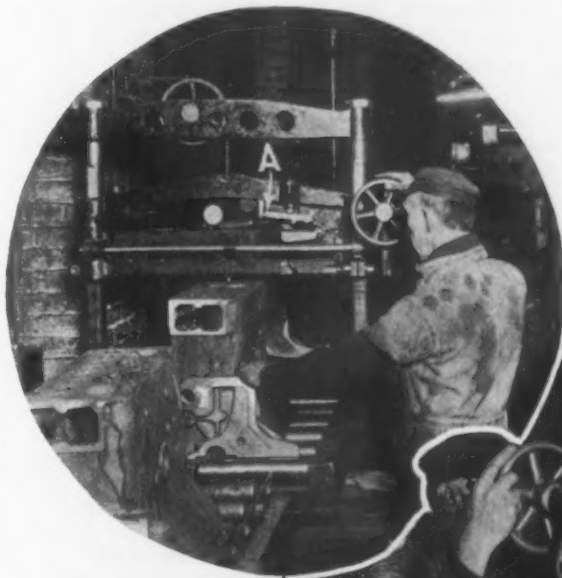


## HARDNESS OF CYLINDER BLOCKS

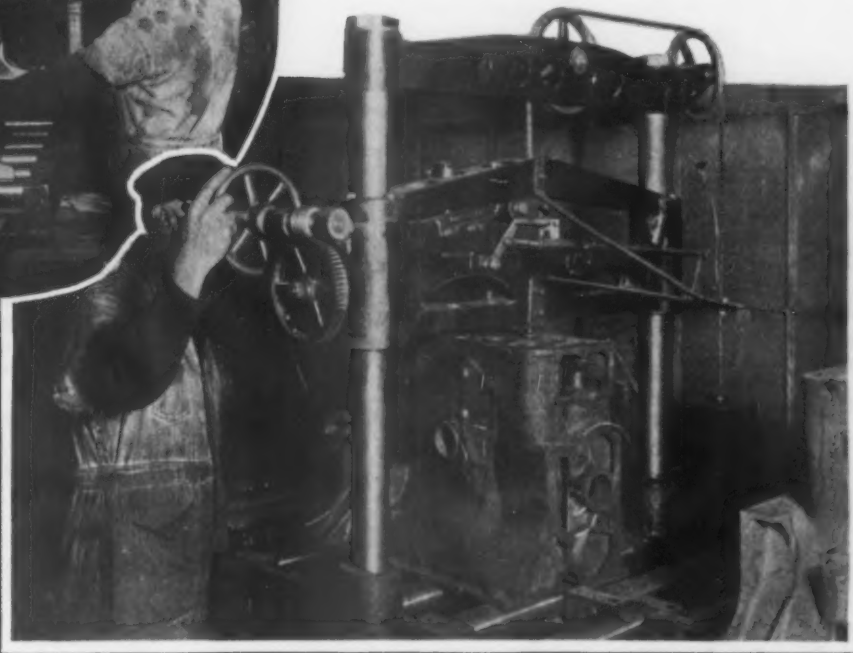
### Special Rockwell Machine Tests Each Unit at Hupp Plant—Valuable Results

Realizing that a hardness testing machine of special design could be used to advantage on a production basis in testing cylinder blocks, the Hupp Motor Car Corporation, Detroit, designed an apparatus which is not only distinctly novel but which, it is believed, applies the principle of hardness testing in a new manner. Some exceedingly interesting results have been obtained by the use of this machine.

In conjunction with the Wilson-Mauelen Co., New York, the Hupp company developed the machine shown in the accompanying illustrations. It is essentially a



Specially Built Hardness Testing Machine Using the Rockwell Principle. Applied to cylinder blocks valuable practical results have been obtained by the Hupp company



Rockwell testing machine in a new guise because it is operated upon the regular Rockwell principle. The cylinder block is put on the base of the machine, which is a specially constructed but improved form of the regular conveyor. The sides of the conveyor system are the portions on which rest the main supports of the machine. The head is counterbalanced by weights. The initial load is placed on the block through a worm and wheel which in turn operates a rack and pinion on the standards of the machine. The full load of 100 kg. is then applied to the block through the regular Rockwell principle, being tripped at the point A. This gives a direct reading on the dial which shows the hardness of the cylinder block on the Rockwell scale. In these tests the Rockwell B scale is used which requires a 1/16-in. hardened steel ball for the impression. Each test requires about ten seconds and several tests are made in the top of each cylinder block.

As a result of several hundred tests on cylinder blocks, which have been cut up at the plant in Jackson, Mich., a direct relation has been established between the hardness on the top of the cylinder block and the interior of the cylinder bore. From this it has been found that hardness is a factor in the wear and life of the motor. There is also a definite relation between

the hardness obtained on the Rockwell machine and that obtained with a Brinell machine.

To prevent cylinder blocks from damaging the ball mechanism of the testing apparatus, if any of the blocks should be pushed through without sufficient clearance, a bracket is attached to the back of the machine, the lower end of which is below the level of the ball of the hardness tester.

It is the custom of the company to stamp the Rockwell hardness number on all cylinder blocks and it is stated that valuable information has been obtained as to the relation between hardness and wear. The company has established definite Brinell ranges and Rockwell ranges on cylinder blocks and the foundry is held to these limits.

### Chairman Topping's Views on Business

John A. Topping, chairman Republic Iron & Steel Co., at the stockholders' meeting, in reply to inquiries as to the outlook for iron and steel, said: "Business is less active, but this fact is not significant, when considered in connection with January and February sales activity, as buying movements are usually followed by quiet periods. Sensational developments at Washington and the business public's disappointment over tax relief measures have also suggested caution. In general, I believe buying is at the low point, because the

evidence all points to consumption near the 'peak'; furthermore, stocks are not excessive, while the buying power of the public has not been affected, and increased demand should not be far off.

"As to Republic's improvements, they will cost, approximately, \$4,500,000 and upon completion will increase both the output of steel and steel pipe capacity and, furthermore, reduce the cost of production. No additional financing will be required for this work."

A booklet entitled "Standardization—what it is doing for industry" has been issued by the American Engineering Standards Committee. It describes how standardization is being carried on, first in the individual plant, second in industry as a whole, third nationally on an inter-industrial basis, fourth and last, internationally. This book can be had by writing to the office of the committee at 29 West Thirty-ninth Street, New York.

A new design of single stage centrifugal compressor has been perfected by the General Electric Co. The machines are available in capacities of 500 to 75,000 cu. ft. per min. at 0.75 to 6 lb. pressure.

## LUXEMBURG HAS DIFFICULTIES

### Dislocation of Exchange, Transportation Congestion, Dockers' Strike, All Bother— 36 Blast Furnaces at Work

LUXEMBURG, March 28.—Revival of activity noticed during the last fortnight of January continued for the whole of February. The rise of currencies has increased the volume of orders, arrivals in coke have been considerable and several furnaces could be blown in.

But transport has again been a keen problem and has caused serious trouble; disorganization still prevails in Belgium and the Antwerp quays are congested since the dockers' strike began in England. A large quantity of finished material had consequently to be stored, waiting for shipment. Besides, an increase of 25 per cent is to take place shortly in the transport tariff in Belgium; this will, of course, put the Luxemburg plants in a very difficult situation for export and oblige them to divert part of the traffic of Antwerp to neighboring ports, as Dunkirk. The economic agreement passed between Belgium and Luxemburg had placed both countries on an equal standing, but we still await a definite settlement of the question of preferential tariffs.

For about a fortnight, since the sharp decline of sterling, the Luxemburg plants, together with French

and Belgian, are in the most awkward position in regard to exportation. Prices calculated in pounds before March 12 are no more acceptable converted into francs. The result is, on one hand, the canceling of many contracts from the plants, or heavy losses for the producers on the other. The latter, besides refusing to accept new orders, as they are booked for several months ahead, and also on account of the resistance shown by the purchasers for the payment in francs. This leads, of course, to a momentary stagnation in business, before a decline takes place in the market.

With the pound at fr. 100.10 and dollar at fr. 23.36 $\frac{1}{4}$ , the prices applied up to March 26 work out as follows: F.o.b. Antwerp; £6 5s. to £6 7s. 6d. (1.22 to 1.24c. per lb.) for beams; £6 12s. 6d. and £6 17s. 6d. (1.29 to 1.34c. per lb.) for bars and £7 15s. (1.51c. per lb.) for heavy sheets; or, in Belgian francs: 750 fr. for beams; 775 fr. for bars; 875 to 900 fr. for heavy sheets.

Furnaces in blast at end of February numbered 36, as follows:

*Arbed.*—6 at Esch s/ A. (out of 6); 6 at Dudelange (out of 6); 2 at Dommeldange (out of 3).

*Terres Rouges.*—6 at Belval (out of 6); Esch out of work (5).

*Hadir.*—8 at Differdange (out of 10); Rumelange out of work (3).

*Rodange.*—5 out of 5.

*Steinfort.*—3 out of 3.

## EXCHANGE VAGARIES BAR EXPORT

### Prices Not Yet Adjusted to Appreciated Franc— Many Works Operating at Capacity

PARIS, FRANCE, March 28.—The sharp rally of the franc, which has continued now for some time, has put French exporters in an awkward position. A fortnight ago, when sterling was around 115 fr., the export price quoted for heavy rolled steels, for instance, was £5 6s. f.o.b., which corresponded to 718.75 fr. of our money. This same basis of £6 5s. this week, with sterling varying around 77 to 78 francs (78.35 at time of writing) gives 487 fr. about, or notably below that of the inland market. Comparison of the above figures will show the danger of exportation with such an excessive instability of exchange. Our foreign trade is consequently at a standstill, not that foreign buyers are unwilling to contract, but as prices in sterling can no more be accepted on their previous levels.

The home market remains cautious in anticipation of a fall which is believed will succeed the sentiment of optimism of the previous weeks. This fall, however, might not come so soon as anticipated, on account of the rise in the price of coke and also of the amount of orders secured lately by the plants.

The last Bourse in Brussels was quite without trade, due to the rise of the franc. Agreement between the producers and consumers, in regard to the home requirements being satisfied before those of exportation, has been concluded. It will be recalled that, during the fall of the franc, the bulk of the output was sold by the plants for export, to the detriment of home requirements.

**Coke.**—During the first 24 days of March the Office de Répartition des Cokes Allemands has been supplied from the Ruhr with 295,224 tons of coke, or a daily average of 12,301 tons. This shows once more that we are now back to the level of before the occupation.

Dating from April 1, German coke will be delivered to consumers by the Office des Houillères Sinistrées at 159.45 fr. per metric ton, (\$8.90 per gross ton) frontier Sierck; for the first ten days of March this price was 143.50 fr. (\$8.01) and 145.25 fr. (\$8.11), for the remainder of the month. Coking smalls will be sold at 115 fr. (\$6.42), on trucks at Sierck (increase 9 fr. on the previous price), or 93 fr. (\$5.19) on boat at Rotterdam.

**Iron Ore.**—January production of iron ore was 2,257,000 metric tons, against 2,035,000 tons in Decem-

ber. Stocks, still very important at that time, have been lowered since, owing to the increased demand of the home and export markets. We remain in the same position as regards transactions with Belgium, due to the shortage of railroad cars, still very acute in that country.

**Pig Iron.**—French producers still hesitate to blow in new furnaces, as the coke situation for next month is uncertain; furnaces already in operation are working to full capacity. The output, although larger than of late, is sold for several months ahead. Making of chill-cast remains limited and much preference is given to the fabrication of Thomas iron, required by the plants for their own purposes. The average of No. 3 P. L. (chill-cast foundry) for March has been 405 to 425 fr. (\$22.61 to \$23.72) and 425 to 435 fr. (\$23.72 to \$24.28). For the moment, the ruling quotation is between 400 and 415 fr. (\$22.33 and \$23.17) maximum.

Cleveland No. 3 GMB at £4 16s. f.o.b. Antwerp can be introduced in the North and East regions of France at 430 fr. (\$24); an isolated transaction in iron of 2.5 to 3 per cent Si, 0.6 to 1 per cent P, 0.04 per cent S, would have been made at £4 12s. 6d. f.o.b. Antwerp, or 415 fr. (\$23.17) in French currency, North region. Material remains scarce in hematite and prices are maintained around 500 fr. (\$27.47) at works or delivered, according to plants and districts. This means that, in competition with British irons, French products will have to be lowered, despite the price of coke being dearer. Swedish iron is also reappearing on our market.

**Ferroalloys.**—A fall is recorded in manganese alloys, the 76 to 80 per cent Mn being worth 1,650 fr. (\$92.10) after touching 1,900 to 1,950 and even 2,000 fr. (\$106, \$109 and \$112). Spiegeleisen, 10 to 12 per cent Mn, is sold on the average of 650 fr. (\$36.30); 18 to 20 per cent, 750 fr. (\$41.87), per ton delivered.

**Semi-Finished Steels.**—For export, the bulk of business has been open-hearth lately. The Meurthe-et-Moselle plants are now working to a capacity of three-fourths of their maximum efficiency. Nominal quotations rule between 60 and 63 fr. (\$33.50 and \$35.17 per gross ton) for ingots; 63 and 65 fr. (\$35.17 and \$36.28) for blooms; 65 and 67 fr. (\$36.28 to \$37.40) for billets; all per 100 kilos in basic steel. Deliveries made now are the execution of orders placed some time ago.

**Rolled Products.**—Demand is slack, on an impending fall in prices; these have, however, been maintained up to now, producers having nothing to sell. The extravagant quotations applied some time ago have disappeared; as an example, we may cite here the price of 800 fr. (1.99c. per lb.) for beams in Meurthe-et-Mo-



selle last week, and the price of 730 to 740 fr. (1.82c. to 1.84c. per lb.) for both angles and beams in the region of the North. The plants of Meurthe-et-Moselle were in the meantime asking 63 to 64 fr. (1.57c. to 1.60c.) for beams. The present average quotation for beams is around 68 to 71 fr. (1.70c. to 1.77c. per lb.) per 100 kilos and 72 to 75 fr. (1.80c. to 1.87c. per lb.) for merchant bars, in basic Meurthe-et-Moselle and Lorraine. The price in the North is 73 fr. (1.82c. per lb.) at works, with trebled scale, and 77 fr. (1.92c. per lb.) West, also with trebled scale.

**Sheets.**—The market is active but displays great scarcity of material. High prices have heretofore been maintained, to the exclusion of a few erratic quotations applied in some instances. Before the rise of the franc, 87 fr. (2.17c. per lb.) was proposed by a firm in the East for 5 mm. sheets and 130 fr. (3.24c. per lb.) for light gages (Ardennes region). Nominal quotations range between 76 and 80 fr. (1.90c. and 2c. per lb.) for large flats; 78 and 82 fr. (1.95c. and 2.05c. per lb.) for

heavy sheets, 90 and 100 fr. (2.24c. and 2.49c. per lb.) for medium sheets; 115 and 120 fr. (2.87c. and 3c. per lb.) for light sheets. One of the last adjudications of the State Railroads involved the price of 121.75 to 142.75 fr. (3.03c. to 3.56c. per lb.) for 1.5 mm. sheets; 116.75 fr. (2.91c. per lb.) for 2.5 mm., delivered free.

**Wire Products.**—Very little material; plants are booked to capacity. Buyers and sellers are holding back, unacquainted with future conditions of the market. Wire rod is sold at 90 to 92 fr. (\$50.25 to \$51.35 per gross ton) per 100 kilos maximum; dealings bear on a few francs lower; soft steel clear wire No. 20, 105 fr. (2.62c. per lb.); annealed, 110 fr. (2.74c. per lb.); galvanized, 140 fr. (3.49c. per lb.) Annealed and galvanized have been adjudicated by the State Railroads at 136 fr. (3.39c. per lb.) for the 4 mm. and 159.50 fr. (3.98c. per lb.) for the 3 mm.

**Scrap.**—More stable, a fall being noticed, however, in some lines. Export to Belgium and Italy, all that has been permitted, has involved important tonnages.

## IMPROVEMENT IN GERMANY

### Orders Heaver in Many Lines—Much Concern Over Scrap Supplies—Syndicates Under Dissolution

BERLIN, GERMANY, March 26.—The general trade revival has now fully extended to iron and steel. There is in certain qualities a shortage. In exceptional cases firms are refusing to take orders for speedy delivery. The French franc recovery has materially relaxed competition. On March 1 of this month the proportion of unemployed in all labor unions was 16.1 per cent, against 21.8 per cent on Jan. 1. The partly unemployed were 12.9 per cent against 30 per cent. These figures are, however, three weeks old, and the three weeks have witnessed a rapid recovery. All steel and iron branches have more or less shared in the recovery. In western Germany some rolling mill concerns began refusing to book orders on about March 10, declaring that they had sufficient contracts to keep them busy.

Orders for railroad permanent way material have increased, after a period of stagnation, and most of these works report satisfactory conditions. Germany has, however, almost entirely lost the North European countries, which were formerly good purchasers. Orders for railroad rolling stock come in slowly. There has been a sudden increase in the demand for thin sheets, but the demand for thicker sheets for the machinery and locomotive industries is weak.

Activity in the tubes branch has increased; also in the wire branch, though here also the northern countries show no sign of reentering the German market as buyers. Foundry concerns report increased orders, except in the Berlin district. The Siegerland concerns report a great improvement. The supply of raw materials has increased, the stopped blast furnaces and rolling mills are rapidly resuming work and a further improvement is expected in April.

Schmalkalden tool and small iron-ware branches report improvement; but complain of inability to compete, owing to high production costs. The machinery branch is also improving. Export has of late increased, mainly owing to temporary German selling at below production cost, this being done in almost every department from small machine tools to big electric power equipments. The home and foreign demand for machine tools, motors, transmission plant and textile, printing and washing machinery, is growing. In the machinery and engineering branch the new 10-hr. day has not everywhere been established without friction. Many strikes have taken place; but in most cases agreements have been reached.

#### Scrap a Vital Problem

Foundation of an iron exchange in Düsseldorf is being considered, with participation of both iron-consuming and iron-producing concerns. It is expected that the iron exchange will unite with the present

scrap-iron exchange. The need for such institutions has arisen as result of the practical cessation of fixed-price quotations and the resulting confusion in the price question. Scrap-iron consumers refused to participate in the scrap exchange. The scrap market is again firm. The question of the state regulation on organization of the scrap market again is being discussed, owing to the ever greater importance of this material for the iron and steel branches. State regulation has not prevented abuses. The decrees of February, 1921, and July, 1922, establishing maximum scrap prices and legalizing the expropriation of scrap when it was intentionally withheld from the market, had little effect. Abolition of import duties on scrap in May, 1922, which was expected to encourage healthy competition at home, was partly nullified by export prohibition decrees issued by some scrap-exporting countries. The German prohibition against scrap export still remains, on paper; but it has been relaxed on demand of the scrap dealers. The smelters now demand general export prohibition, justifying the demand with the following figures: 1922, imports 600,983 metric tons, exports 98,467 tons; 1923, imports 155,092 tons, exports 380,887 tons. The prevailing scrap price of 78 marks per ton (\$18.88) is considered too high in proportion to a bar price of around 140 marks (1.51c. per lb.).

The Iron and Steel Industries Association of Düsseldorf has petitioned the Ministry of Industry, demanding a further 10 per cent reduction of railroad rates, on top of the 8 per cent reduction of Jan. 20 and the 10 per cent reduction of March 1. As result of the weakening competition from France, due to the franc exchange rise, pig iron prices have been raised by 3 gold marks per ton for all qualities, after March 17. Pig prices for delivery in South Germany were raised by 5 gm. per ton.

A further all-around price rise is expected; and the actual price demanded for bars for speedy delivery is at present as high as 180 gm. (1.95c. per lb.).

#### Negotiations with French Commission

No settlement has yet been reached in the question of renewing the Ruhr employers' agreements with the French "Micum" Commission, most of which expire on April 15. Individual firms have come to new agreements with the French; but the Berlin Government has denied that it has approved these agreements. At the same time, Berlin persists that it cannot compensate the Ruhr masters for their enforced deliveries to the Allies. The French have raised the export duty on German iron and steel dispatched out of occupied territory to 100 per cent of the normal German frontier rate, which is 4 to 5 per cent on sale price.

It is expected that the agreements will be temporarily prolonged until the result of the Dawes Committee's deliberations appears, giving some indication as to whether a general reparations settlement is to be reached or not. While the Ruhr masters persist that they cannot bear the present burdens, they see equally

well that confusion would result if the agreements were allowed to terminate without new agreements being made.

#### Dissolution of Syndicates

Signs of dissolution in the big "heavy industry" syndicates continue. Negotiations held this month for fusion in the tubes branch failed, owing to the opposition of interests between Western and Eastern producers. The new organization of rolling-mill proprietors (Walzeisen-Vereinigung) is now at work. The Kloeckner concern's report for 1922-23 shows the nominal profit of 1,540 million paper marks. No dividend

is paid. This is the first important Western concern to issue a report and it is also the first time all the companies fused in the concern report together. The concern consists of the Lorraine Smelting & Mining Co., the Koenigsborn Co., the Georg-Marine Mining & Smelting Co., Hasper Iron & Steel Works, Mannstedt Faconisenwalzwerk, and Düsseldorf Iron & Wire Co.

The Rhenisch Stahlwerke Co. has founded a new steel trading company in Hagen. The agreement between the Düsseldorf Iron Smelting Co. (Otto Wolff group) and the Archimedes Co. of Berlin, for common selling of certain kinds of goods, has been extended to cover dealings in all steel and iron goods.

## LOWER PRICES IN BELGIUM

### Meeting Franc Exchange—Unsettlement Cur-tails Business—Exporting Difficult

ANTWERP, BELGIUM, March 29.—Business in Belgium, especially for export, is scarce. This is principally due to the special state of prices which, on account of the higher value of the franc, are no longer at the level of world quotations. In fact, such rates of exchange as fr. 130 for £1 and more than fr. 30 for \$1 at the beginning of this month, made all prices, expressed in francs, unduly high. During the whole month the market for all products remained firm, with always higher tendency.

Prices have already dropped for different articles, and it is nearly certain that, if the rate of exchange keeps as it is now, further reductions will come and prices will compete again with foreign prices. A sudden and important decline of prices will not yet occur so long as makers are not anxious to get orders, but without any doubt, admitting money stability, they will be in want of orders soon, especially as it is necessary for them to fill with the smallest possible delay the orders they booked at the momentarily high prices, on pain of eventual cancellation of these orders.

As an example, let us take bar iron, which was quoted up to fr. 800 and more. At that time this price represented not more than £6 3s. or \$26.60, while the same quotation today would actually represent £8 or \$34.35, when English buyers are not willing to offer more than £8 12s. 6d. for this material, i.e., with the actual rate of exchange, fr. 660. The difference is of course, too large, and therefore we may conclude that momentarily business on a large scale, especially for export, does not exist. The price now quoted is fr. 775, viz., £7 15s., or \$33.25, but principally for home consumption and without much business.

So it is for nearly all departments. Buyers expect lower prices, and per contra makers do not follow the decline of prices commanded by the changes of exchange rates. Therefore, nearly no real quotations exist for billets, blooms or ingots. Prices for commercial iron are not at all defined, with no business either for steel or for pig iron in general.

**Pig Iron.**—Pig iron prices for high phosphorus qualities, with 2.5 to 3 per cent Si, are between fr. 500 and fr. 520, delivered. This lower price is still too high if compared with the lower rate of exchange. Export is therefore quite out of the question. In fact, this quotation means actually a minimum of £5, f.o.b. Antwerp (or \$21.50, at least), while Middlesbrough No. 3 foundry pig iron is easily obtainable at £4 10s., f.o.b. English harbor.

This Belgian price, also quoted by the Luxemburg works which have still some quantities available (the latter are more or less scarce), notwithstanding being too high for export, is low enough to prevent an increase of the import of Middlesbrough foundry iron into Belgium. In fact, Belgium importers sell this grade of pig iron on a basis of £4 17s. 6d. per ton on trucks at Antwerp, i.e., about fr. 510 delivered. However, some good orders have been placed after the falling of exchange, especially as customers could get for this Middlesbrough iron a prompt delivery, which is not possible for Belgian and Luxemburg iron.

Lorraine foundry iron is not on the Belgian market

for the moment. In fact, the actual large difference of the Brussels and Paris rate of exchange, some 26 per cent, makes it impossible for Lorraine works, with the orders they booked at the time of the higher prices, to compete either with Belgian, Luxemburg or English prices. Hematite pig iron is not available and prices do not exist. Thomas iron also is too dear and prices quoted quite unattractive.

Demands from abroad for semi-phosphorus foundry pig iron were on the market. Continental prices for pig iron, with 2.5 to 3 per cent Si, Mn under 1 per cent, P under 1 per cent and S 0.05 per cent maximum, are about \$19.50 to \$20 per ton, f.o.b. Continental port. These prices are mostly German quotations, as Belgian iron of this quality is not available and French qualities are much dearer.

#### Current Prices

As a guidance the following nominal approximate prices are quoted, for home consumption, delivered at consumer's works:

#### Converted Prices

	Fr.	American	British
Foundry pig iron No. 3.	500	\$21.45	£5 0s.
Thomas pig iron.....	460	19.75	4 12
Luxemburg foundry.....	500	21.45	5 0
Thomas ingots.....	630	27.00	6 6
Thomas billets.....	675	29.00	6 15
Thomas largets.....	760	32.60	7 12
Heavy sheets, basis.....	900	38.65	9 0
Merchant iron No. 2.....	775	33.25	7 15
Bar iron, basis.....	775	33.25	7 15
Heavy beams.....	750	32.20	7 10
Open-hearth steel.....	800	34.35	8 0
Hoop iron.....	1,050	45.00	10 10

As a comparison, English importers offer about:

127s. 6d. for light beams against Belgian price 156s to 158s.  
125s. for heavy beams against Belgian price 150s.  
132s. 6d. for bar iron, basis against Belgian price 155s.  
155s. for heavy sheets against Belgian price 180s.

Scrap iron on the Belgian market is dear, also, and is quoted approximately:

	Fr.	or	\$
Furnace scrap.....	380	or	\$16.30
Open-hearth scrap.....	400	or	\$17.15
Foundry scrap.....	460	or	\$19.75

#### Price Table

The following table will show the nominal prices on April 1, as compared with February, 1924, and April, 1913. The figures in parentheses are American equivalents, at prevailing exchange rates, in dollars per gross ton or cents per lb.

	April, 1913	February, 1924	April, 1924
Luxemburg chill-cast iron.....	90 (\$17.64)	450	485/490 (\$25.01)
Luxemburg Charleroi.....	95 (\$18.62)	...	...
Luxemburg Thomas.....	89 (\$17.45)	440	490 (\$25.27)
*Blooms.....	134.50 (\$26.37)	500	550 (\$28.36)
*Blooms.....	131.50 (\$25.78)	560	560 (\$28.88)
*Billets.....	128.50 (\$25.19)	590	575 (\$29.65)
*Billets.....	132 (\$25.88)	590	580 (\$29.91)
*Steel bars.....	141.25 (1.24c.)	650/675	775/725 (1.67c.)
Beams.....	142.80 (1.25c.)	625/650	775/700 (1.61c.)
Steel bars (delivered).....	160 (1.40c.)	660/675	775/700 (1.61c.)
Beams (delivered).....	165 (1.44c.)	630/650	775/700 (1.61c.)
Wire (inland and export).....	150.25 (1.32c.)	850	950 (2.19c.)
*Rods.....	150 (\$29.40)	825	925 (\$47.70)
*Thomas steel sheets.....	158.75 (1.39c.)	775	875 (2.01c.)
*Homogeneous metal sheets.....	170 (1.49c.)	785	885 (2.04c.)
*Steel rails.....	150 (\$29.40)	700	750 (\$38.68)
Steel rails.....	175 (\$34.30)	775	775 (\$39.97)
Thomas steel sheets.....	172.50 (1.51c.)	775	850/800 (1.84c.)
Thomas homogeneous metals.....	180 (1.58c.)	785	890 (2.05c.)

\*Export price.



# European Exchange Vagaries Cause Chaos

Export Operations Most Difficult—British Equipment  
Purchases—Ruhr Industrialists Renew Micum  
Contracts—French Works Well Employed

(By Cable)

LONDON, ENGLAND, April 15.

**P**IG iron is rather weaker in foundry grades, on decrease of domestic buying, but good sales for export are maintained. Domestic consumers are fairly well covered and not disposed to commit themselves further, owing to the uncertainties in the shipyard outlook.

Export demand for hematite broadens and prices are steady, tending upward.

Finished steel is quiet. Some makers are anxious for fresh orders. There is a fair volume of inquiry for small parcels, but substantial tonnages are wanting. Prices are steady, with little appearance of weakening, owing to costs.

The Great Western Railway intends to spend several million pounds sterling on improvements to the Newport docks. The Broken Hill Proprietary Co., Ltd., has se-

cured an Australian rail contract of a value of £390,000 (\$1,693,000). The London & North Eastern Railroad has placed orders for 60 main line carriages (passenger cars) with Clayton Wagons, Ltd., Lincoln.

March pig iron exports were 28,327 tons, including 4870 tons to America. Total shipments of iron and steel amounted to 288,152 tons.

Continental position is chaotic, with practically no business passing through London, and sterling quotations quite nominal. Belgian merchants are reported to be offering cheap rates, probably speculatively.

Ruhr industrialists have renewed the contracts with "Micum" until June 15.

Tin plate is quiet, with some makers willing to shade prices, owing to weakness in tin. There is fair all-around demand for small parcels.

Galvanized sheets are quiet.

Black sheets are dull.

## British Pig Iron Once More Going to the Continent—Labor Troubles and Costs Hamper Exports

LONDON, ENGLAND, April 3.—Developments of interest have occurred in the iron and steel trades following on the sudden upward movement in franc exchange. For a long time Continental pig iron could be brought to this country at much cheaper prices than domestic makers could offer. Many thousands of tons were sold, with the result that British makers lost orders and steps were taken to curtail the output.

With the sudden turn in the rate of exchange, new buying of Continental iron is brought to a standstill and in a remarkably short time the Continent has once more come in as a buyer of British material. Our output having been diminished, makers have rapidly disposed of their stocks and the position is once again a

healthier one, Cleveland No. 3 commanding up to £4 12s. 6d., after having been down in the region of £4 10s.

## Labor Troubles and Costs

Various industrial unrests continually brought to the front are factors which have to be taken into consideration. Unless amicable arrangements are made, a lockout of the shipyards is to take place from April 10, and this will of course have disastrous effects upon the pig iron and steel trades. There is, too, the threat of a coal strike, which is of still further importance.

While it must be admitted that prices of British material are high, one cannot get away from the fact that costs are to blame and, until these are reduced, lower prices cannot be looked for. Under the sliding scale, by which various wages are fixed, blast furnace men in certain quarters will get more money in the next quarter, owing to the increased selling price of iron

British and Continental prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at \$4.34 per £1, as follows:

Durham coke, delivered	£1 11s.	to £1 12½s.	\$6.73 to \$7.05
Bilbao Rubio oref. ....	1 4		5.21
Cleveland No. 1 foundry	5 0		21.70
Cleveland No. 3 foundry	4 12½	to 4 15	20.07 to 20.62
Cleveland No. 4 foundry	4 12		19.96
Cleveland No. 4 forge...	4 11½		19.86
Cleveland basic	4 15		20.62
East Coast mixed.....	4 19½	to 5 0	21.59 to 21.70
East Coast hematite....	4 19	to 5 0	21.48 to 21.70
Ferromanganese	17 0		73.78
Rails, 60 lb. and up....	8 10	to 9 10	36.89 to 41.23
Billets	8 0	to 8 5	34.72 to 35.81
Sheet and tin plate bars,			
Welsh	8 18¾		38.79
Tin plates, base box...	1 4½	to 1 4½	5.26 to 5.32
			C. per Lb.
Ship plates	9 5	to 9 15	1.79 to 1.89
Boiler plates	13 0	to 13 10	2.52 to 2.62
Tees	9 10	to 10 0	1.84 to 1.94
Channels	8 15	to 9 5	1.70 to 1.79
Beams	8 10	to 9 0	1.65 to 1.74
Round bars, ¾ to 3 in.	10 0	to 10 10	1.94 to 2.03
Galvanized sheets, 24 g.	17 15	to 18 0	3.44 to 3.49
Black sheets, 24 gage...	13 10	to 13 15	2.62 to 2.66
Black sheets, Japanese			
specifications	15 5		2.95
Steel hoops	12 10	& 12 15*	2.42 & 2.47*
Cold rolled steel strip,			
20 gage	17 2½		3.32

\*Export price. †Ex-ship, Tees, nominal.

Continental Prices, All F. O. B. Channel Ports					
(Nominal)					
Foundry pig iron:					
Belgium .....	£4 4s.	to £4 5s.	\$18.23	to	\$18.45
France .....	4 4	to 4 5	18.23	to	18.45
Luxemburg .....	4 4	to 4 5	18.23	to	18.45
Billets (nominal):					
Belgium .....	6 0	to 6 5	26.04	to	27.13
France .....	6 0	to 6 5	26.04	to	27.13
Merchant bars:					
			C. per Lb.		
Belgium .....	7 0		1.34		
Luxemburg .....	7 0		1.34		
France .....	7 0		1.34		
Joists (beams):					
Belgium .....	6 10	and upward	1.26		
Luxemburg .....	6 10	and upward	1.26		
France .....	6 10	and upward	1.26		
Angles:					
Belgium .....	8 0	to 8 5	1.55	to	1.60
½-in. plates:					
Belgium .....	7 15		1.50		
Germany .....	7 15		1.50		
¾-in. plates:					
Luxemburg .....	7 15		1.50		
Belgium .....	7 15		1.50		

during the past quarter. This, in consequence, adds further to manufacturers' costs, and so the vicious circle goes on.

But apart from the labor troubles there is no doubt that there is a lot of work to be done in this country, which will call for large quantities of iron and kindred materials. The backbone of industry here is, however, export and it is in these markets that, so far this year, there has been little sign of life. Buying of steel for shipment, except in the case of certain specialties, is poor, and has of course been affected by competition from Continental producers, who have been shipping thousands of tons bought at prices much lower than those ruling here.

## SHEET INQUIRIES FROM JAPAN

### Price Concessions Brought Out, But Little Business—Chinese Railroad Asks for Rails

NEW YORK, April 12.—Inquiry from Japan for light gage black sheets has become quite active in the past week or two, but only a few orders are reported to have been placed. It is doubtful that much or any of this business is going to British makers, despite reported quotations by them as low as \$97 per ton, c.i.f. Japan, for, according to report, American mills have met this price without receiving an order. One large seller in the United States is quoting \$104 per ton and offering to take orders at \$102 per ton, c.i.f. Japan, but certain other makers, according to report, have gone as low as \$97 per ton on 27 sheets to the bundle, c.i.f. Japanese port and \$93 per ton, for assortments, which included No. 28 gage and 30 gage sheets. In some quarters much of the present interest in sheets is attributed to heavy buying of a speculative nature by certain large importers in Japan following the earthquake. With heavy stocks on hand the holders are trying to establish the current value. On the other hand, a large export seller in the United States reports having booked some tonnage of light gage black sheets.

Inquiry from Japan has also included tin plate in small lots, one inquiry calling for 1000 boxes, bars and wire rods. There is also some interest in railroad material in addition to the inquiries now current.

A Chinese railroad, the Mukden-Shanhaikwan, part of the Pekin-Mukden line, is receiving bids on 100 miles of 60-lb. Sandberg treated rails, through Dairen, Manchuria and Pekin. Quotations are requested, c.i.f. Shanhai-kwan. This railroad has bought through an export company dealing with China about \$20,000 worth of material for car repairs.

The Anzin Steel Works in Manchuria is reported to be in the market for conveying and material handling equipment running into upward of \$100,000.

### Reconstruction in Japan

Reconstruction in Tokio and Yokohama is to a great extent awaiting passage of the reconstruction bill now pending before the Japanese diet, according to A. M. Stewart, of James Stewart & Co., 30 Church Street, New York, who recently returned from Japan. Mr. Stewart was in Japan on business connected with the contract received by his company for building the new Mitsui Bank Building, which, it is planned, will be one of the largest and finest banking institutions in the world. It will be erected on the site of the old Mitsui Bank in Tokio, in the same block with a group of other Mitsui buildings, on one of the four corners occupied by the Mitsukoshi, the foremost department store of Tokio, the Bank of Japan and the Yokohama Specie Bank.

Explaining recent rumors to the effect that Mitsui & Co. had been forced to request postponement of the building contract because of difficulty over reconstruction plans, Mr. Stewart pointed out that the present bill for reconstruction probably will not be passed until after the election, May 14, and that the only obstacle to erection of the Mitsui Bank is the question of width of the street on which it fronts. As Mitsui & Co. have plenty of acreage on which to build, the question is merely one of establishing the building line. Even though there were no question to be settled by the pas-

The position of the Continent is difficult to understand. When the franc was at its lowest sterling prices were relatively cheap but, now that the franc has improved, competition is practically out of the running so far as sterling quotations are concerned. It is reported that large business has been done direct between Continental works and merchants and overseas, particularly Far Eastern, purchasers, on the basis of prices ruling when the franc was in the neighborhood of 140 per £1. Undoubtedly Continental works have been well booked, but they must now be reaching the time when new orders are wanted and it will therefore be of great interest to see what attitude the makers adopt, now that the franc has recovered 50 per cent from its lowest level.

sage of the reconstruction bill, actual excavation work would not begin before Sept. 1 and by that time, the present bill or a similar one will have been enacted. In the meantime, James Stewart & Co. are completing plans and will continue preparations for building.

The new building, which will embody the improvement developed in building construction in Japan since the earthquake, will be heavily reinforced up to the third story, with lighter construction from the third story to the roof. Of five stories, the building will be less than 100 ft. high. Mr. Stewart pointed out that a similar building erected in New York would probably call for about 3000 tons of structural steel, but this building reinforced for strain of earthquake will probably call for close to 6000 tons. Practically all materials will be purchased in the United States, probably including the granite, which it was at first believed could be obtained from Japanese quarries.

Mr. Stewart said that from his observation reconstruction would doubtless be slow. The larger companies are preparing to rebuild as soon as possible, but many of the smaller companies and firms were practically ruined by the earthquake as insurance policies all contained earthquake clauses. An appropriation by the Government paid to native companies has enabled them to pay to their policy holders about 10 per cent of losses, but holders of policies in foreign insurance companies have suffered total loss.

### Not So General Expectation of Wage Reduction in Connellsville Region

PITTSBURGH, April 15.—The idea that there may possibly be a general reduction of wages in the Connellsville district in the near future is not so commonly held as it was recently. The principal reason for this change of opinion is found in the fact that the H. C. Frick Coke Co. gives little indication that it is even considering the matter of wage changes and being the largest producer in the district and having the largest number of employees, its course has considerable influence upon the action of other producing interests. It is expected that the quarterly earnings statement of the United States Steel Corporation, of which the H. C. Frick Coke Co. is a subsidiary, will make a highly favorable showing for the three months ended March 31 last. For the Steel Corporation in the face of large earnings to reduce wages of coal miners and coke oven workmen, it is pointed out, might possibly invite unfavorable comment and there is also the consideration among independent operators that a reduction in wages at this time, in view of increases to railroad workmen and to members of the building trades, would stand out as an invitation to organized labor to start unionization efforts. As a matter of fact, the fear of activity on the part of the United Mine Workers of America is responsible for some change of heart among those who have been considering wage reductions.

Furthermore, it is not believed that demand for coke and coal would be any better at prices lower than those that now prevail, because the lack of demand today is not due to prices but rather to the fact that there was some pretty heavy stocking of coal in anticipation of a possible miners' strike and these stocks now are being drawn on to release the money tied up and to avoid a danger of possible loss through fire.



# CONTENTS

April 17, 1924

<b>Principles in Cast Iron Flask Design .....</b>	<b>1137</b>
Application to Jarring Machine Work on Gray Iron—General Rules as to Bars—Core Weights and Supports	
<b>Improving Flexibility and Cost of Power .....</b>	<b>1141</b>
Tying Up of Own Power Stations with Current from Public Service Company Gives Wire Plant Ease of Control	
<b>Heat-Treating Furnaces Using Recuperation .....</b>	<b>1156</b>
Effect of Pre-Heating the Air, Using Coal, Oil or Other Fuels—Applications to Annealing and Carburizing	
<b>Bethlehem Park—An Industrial Village .....</b>	<b>1160</b>
Three Hundred Houses to Be Sold to Employees on Easy Terms—Attractive Layout Planned, with Gardens, Parked Boulevard and Playground	
<b>Plan to Draft Men, Money and Property .....</b>	<b>1145</b>
<b>Sees Some Factors in Industrial Activity Slowing Up .....</b>	<b>1146</b>
<b>Activities of Former German Armament Works .....</b>	<b>1151</b>
<b>Attorney-General and Trade Associations .....</b>	<b>1155</b>
<b>European Exchange Vagaries Cause Chaos .....</b>	<b>1167</b>

New Ford Steel Plant.....	1150
Steel Imports Into Japan.....	1150
Seek New Uses for Slag.....	1152
Portland Cement Production.....	1154
Ohio Plants Fairly Busy.....	1158
Proposed Scrap Tariff Cancelled.....	1158
Cost of Building Doubled.....	1159
Conflicting Trends in March Construction Record .....	1159
Rewarding Workers for Suggestions...	1161
Book Reviews .....	1162
Foreign Iron and Steel Markets.....	1164
Purchases Rights to Coke Separating Machine .....	1173
Fabricated Steel Business.....	1187
Railroad Equipment Buying.....	1187
New Companies and Trade Changes...	1190

## Meetings

New England Foundrymen Hear About Germany .....	1147
To Discuss Rights of Trade Associations	1147
Safety Engineers Meet.....	1147
Taylor Society to Discuss Psychology	1147
Program of Gear Manufacturers' Meeting in Buffalo.....	1148
Welding Society to Hold Annual Meeting .....	1148
Coming Meetings .....	1148

Iron and Steel Markets.....	1174
Comparison of Prices.....	1175
Prices f.o.b. Pittsburgh.....	1188
Prices of Raw Materials, etc.	1189
New York Jobbers' Prices...	1202

British Mining and Metallurgical Congress .....	1149
Electrochemists at Philadelphia Next Week .....	1149
Iron and Steel Institute's Technical Program .....	1149
Cost of Doing Business Topic for Management Convention.....	1157

## New Equipment

New Power Brake.....	1144
Machine for Bending Complete Rings..	1144
Vibrating Screen for Fine Materials...	1149
New 22-Inch Geared Head Lathe.....	1154
Hardness of Cylinder Blocks.....	1163
New Non-Metallic Resistor.....	1193

## Statistical

British Foreign Trade.....	1140
Magnesite in 1923.....	1140
Iron and Steel Production of Belgium..	1140
Iron and Steel Production of Luxembourg .....	1140
Fluorspar in 1923.....	1144
Steel Corporation's Orders Decrease...	1148
Sheet Statistics for March.....	1173
Lead Production in 1923.....	1191

<b>Editorials .....</b>	<b>1170</b>
<b>Personals .....</b>	<b>1192</b>
<b>Obituary .....</b>	<b>1193</b>
<b>Non-Ferrous Metals.....</b>	<b>1191</b>
<b>Machinery Markets.....</b>	<b>1194</b>

ESTABLISHED 1855

# THE IRON AGE

EDITORS:

A. I. FINDLEY

WILLIAM W. MACON  
C. S. BAUR, *General Advertising Manager*

GEORGE SMART

Member of the Audit Bureau of Circulations and of  
Associated Business Papers, Inc.

Published every Thursday by the IRON AGE PUBLISHING CO., 239 West 39th Street, New York

F. J. Frank, *President*

PRINTED IN U. S. A.

George H. Griffiths, *Secretary*

Owned by the United Publishers Corporation, 243 West 39th Street, New York. H. M. Sweetland, *Pres.*, Charles G. Phillips, *Vice-Pres.*, A. C. Pearson, *Treas.*, F. J. Frank, *Secy.*

BRANCH OFFICES—Chicago: Otis Building. Pittsburgh: Park Building. Boston: 425 Park Square Building. Philadelphia: 1420-1422 Widener Building. Cleveland: Guardian

Building. Detroit: 7338 Woodward Ave. Cincinnati: First National Bank Bldg. Buffalo: 833 Ellicott Square. Washington: 26 Jackson Place, N. W. San Francisco: 320 Market St. London, Eng.: 11 Haymarket S.W.1. Subscription Price: United States and Possessions, Mexico, Cuba, \$6.00; Canada, \$8.50; Foreign, \$12.00 per year. Single copy 25 cents.

Entered as second class matter, June 18, 1879, at the Post Office at New York, New York, under the Act of March 3, 1879.

## Business and the Investigations

**B**ECAUSE this is a presidential year and because many men in all parties are anxious to make as much political capital as possible—although some are more unscrupulous about it than others—it is difficult to follow events at Washington and decide how much of the activity of investigating committees is justified and for the country's good and how much is unwarranted, malicious attack.

A few points stand unquestioned. One is that there was abundant reason for investigating the oil leases and the Department of Justice. Another is that the investigating ought not to be stopped until the truth is ascertained as fully as possible. Still another is that the Government and not any individual, whether he be a Senator or not, should be allowed to employ investigators or pay any other expenses of investigations.

The attitude of business, big and little, throughout the country is increasingly discussed in connection with the investigations. It is unquestionably true that the turmoil at the national capital has tended to check buying, not because of the evidence presented, but because the investigations and the passing of the bonus bill have interfered with the enactment of laws to reduce taxation and relieve business and the people of excessive burdens. The business world is not afraid of any facts that may be developed at Washington in regard to crooked politicians or crooked business men. Business in general is honest and is anxious to see the dishonest punished. It will be glad if as a result of the disclosures higher standards of conduct are established not only on the part of all officials, but also of former officials and those with whom they have relations, so that an ex-official will not traffic in influence after leaving office, and will not accept exorbitant fees because he is persona grata with public servants.

The pursuit of the dishonest is, however, far removed from general muckraking carried on in the hope of blackening the reputations of as many men as possible in the other party, or in another faction of the same party. To that kind of proceeding the country has a right to object and is objecting. Senators and Representatives who

waste their time and public money in needlessly prolonging the investigations will be held to strict accountability.

## Car Buying in 1924

**R**AILROAD car purchases may exceed somewhat those of 1923. For one thing, retirements last year exceeded 180,000 and in two years 300,000. Yet orders last year called for less than 95,000 cars. Larger capacity cars and more efficient loading and use of cars cannot always compensate for a diminishing total. Orders placed since Jan. 1 amount already to two-thirds of the total for all of 1923 and are one-tenth more than were taken up to the middle of April a year ago. On the record that presidential years are good rather than bad, railroad earnings point to some flow of railroad equipment business in the months to come rather than a long period of quiet such as was seen last year between the first quarter burst of buying and the activity developing in December.

## The Steel Corporation's Capacity

**S**INCE late in 1920 a statement has appeared now and then in reports of the steel situation to the effect that the Steel Corporation was operating at a higher rate than the independents. All these percentage statements are, of course, based on "capacity," whereas precise information as to the actual capacity of the steel industry as a whole is not available. The capacities reported in the Iron and Steel Works Directory and the annual statistical report are regarded as nominal and the trade commonly assumes that the tonnages given cannot be attained in ordinary normal practice.

That there is much looseness in the use of these percentages of operation is suggested by this fact, that very frequently if a summary is made of the alleged rates at which different finishing branches of the steel industry are operating—the tin plate mills, the structural mills, rail mills, etc.—it turns out that these finishing departments are said to be running at as high a percentage rate of capacity as is ingot production,



whereas it is well known that the steel industry never has been able to do this.

Always there has been an excess of finishing capacity over ingot producing capacity. For this there is a logical and sufficient reason. At no one time can the market demand be expected to be allocated in expected proportions among the different finished products, and a steel plant making a variety of products is well designed when it can operate full in ingots without each and every finishing department operating to its full capacity.

An index to the Steel Corporation's own rating of its capacity has been furnished by the annual reports since 1909, each of which has contained a statement of the average percentage rate at which the corporation operated during the year. Dividing these percentages into the output of steel products for sale, in their various forms, billets, rails, nails, tin plates, etc., gives a figure that cannot be far out as representative of the assumed capacity. For 1914 the output of these products was 9,014,512 tons and the percentage of operation 62, which made 14,500,000 tons. For 1915, with 11,762,639 tons and 81 per cent, the quotient is also 14,500,000 tons. For 1923, with 14,721,469 tons and 88.3 per cent, the quotient is 16,675,000 tons.

In a sense this apparent capacity is non-descript, in that it includes an assortment, varying somewhat year by year, of semi-finished steel and steel in various finished forms down to high degrees of finish. But it is this steel that the corporation sells, and it is such steel that figures in the much quoted "unfilled orders" that are reported month by month, although "unfilled obligations" would be a more descriptive term, seeing that the amount of the tonnage does not always forecast precisely the rate at which the corporation is going to make and ship steel. For 311 working days in the year the 16,675,000 tons of steel products represents 53,600 tons daily, a factor convenient to use in considering the monthly unfilled tonnage.

According to the figures cited, the Steel Corporation's capacity increased from 1914 to 1923 by 15 per cent. The view is generally accepted that the capacity of the steel industry as a whole has increased by not far from 50 per cent, but from this one would infer that independent capacity has nearly doubled. Possibly the Steel Corporation's capacity is more conservatively rated. If so, the disparity sometimes shown by citation of percentage rates of operation by the Steel Corporation and the independents respectively is not really so great as would appear.

THE steel industry of the Pacific Coast has expanded rapidly since the war. One measure of this development is the quantity of pig iron imported on that coast. The Department of Commerce finds that 83,230 gross tons, or about 23 per cent of the pig iron imports of the country in 1923, came through four different customs districts along the Pacific. Much of this was foundry pig iron, for which there is no satisfactory substitute. There is a limit to the amount of scrap that can be used in the making of iron castings, but a large proportion of the steel made in that district is either open-hearth steel, into which practically

no pig iron enters, or it is electric steel. The growth of steel making on the Pacific Coast has been gradual and with some ups and downs; but with pig iron available from the new developments in Utah a long-standing desideratum will have been met and more rapid expansion is to be expected. For some years the steel plants of the Coast States have had a capacity of more than 1000 tons of ingots and castings daily with output running from 250,000 to 300,000 tons a year. When Utah pig iron becomes available this year leading producers will be able to lower their costs through greater independence of the scrap market, and thus be in position to take a larger share of coast business as well as eventually to increase their shipments to the Far East.

### Index Numbers

THERE are many series of index numbers of well-sponsored calculation and each of them is useful for depicting the trend in economic conditions in the particular line that it represents. A good many persons, however, in considering such numbers overlook the fact that they represent some particular thing and that only. Thus, one set of numbers may represent the general trend of raw materials, another that of agricultural products only, another that of producers' goods and another that of consumers' goods. We have some indices that are more specific, such as those for construction costs. Under each of the particular heads there are various lines of figures, differing among themselves, reflecting different methods of computation. Thus, there are indices for consumers' goods, computed and reported by the Bureau of Labor, the Federal Reserve Board and the National Industrial Conference Board, which differ considerably, especially for the period of 1916-21, when economic conditions were most chaotic.

The National Bureau of Economic Research, having computed the national income expressed in terms of current dollars over a series of years, was obliged to have a series of figures measuring the degree of inflation, or writing up of values, in order to compare annual incomes with that of a base year, 1913 being selected. In other words, it was necessary to have a factor to enable quantitative comparisons to be made instead of dollar comparisons. It is probable that this part of the work of the National Bureau of Economic Research on the national income, generally praiseworthy as it is, will have to be revised more than any other feature of it. In truth, at the time when it made its first report no adequate attention to this branch of practical economics had been given by anybody. Since then a good deal of water has run through the mill, turning its wheel for much useful work.

In a recent book on "Current Economic Affairs," reviewed in THE IRON AGE of March 27, Dr. W. R. Ingalls developed what he called a "most probable composite index," which he also described as "a general economic index." A little later Carl Snyder of the Federal Reserve Bank in New York calculated and reported an index of "general price level." These several descriptions mean the same thing. They aim to show the posi-

tion of prices and costs in general in comparison with what they were in 1913. In other words, if we were informed of the total amount of the national income in 1923, expressed in dollars, we should divide it by the index number for that year in order to ascertain how it compared with the national income for 1913, expressed in the dollars of that year.

It is interesting to compare the opinions of Messrs. Ingalls and Snyder, which is done in the following table:

	Snyder	Ingalls
1913.....	100	100
1914.....	101	100
1915.....	103	101
1916.....	116	125
1917.....	140	150
1918.....	164	165
1919.....	186	195
1920.....	213	200
1921.....	178	170
1922.....	170	170
1923.....	181	180

It will be observed that the two authorities are in rather close agreement. Mr. Snyder's figures are the results of calculation, while the method of Dr. Ingalls was the examination of a large number of indices and the exercise of empirical judgment as to what appeared to be the most probable. There is no essential variation in these thoughts, for Mr. Snyder's method is in itself empirical. The important thing is the close agreement of the opinions, which are really at variance only in some of the chaotic years and even then by less than 10 per cent.

With the above figures in mind any one may develop to what extent economic conditions are in unbalance with respect to pre-war time, whether it be as to goods or services. The people who are paying for railroad transportation 1.8 times what they used to are simply paying what they ought to. Those who are getting for a nickel the same ride in the subway as formerly are enjoying a privilege that accrues from the disadvantage of somebody.

The variations in commodity prices from the general index may be ascribable to conditions of supply and demand. Thus, copper and rubber are relatively low, because they are plentiful, while lead is relatively high because it is not plentiful. For the most part the prices for commodities are lower than the general index at present, while the prices for services are above it. In analyzing the prices for services, however, just as with the prices for commodities, there are found to be striking variations. Among some classes of workers the rate of wages is far above the general index, which means that such workers are able to command more goods than they could in 1913. The wages of other workers are lower than the general index and they have to do with less goods. If everything were in tune with the general index everybody would be in the same relative position as formerly. Without any doubt equilibrium eventually will be restored, but it may be a great many years before that comes about.

#### British Metal Craftsmen Coming In

**I**N the nine months ended Sept. 30, 1923, 12,207 British skilled craftsmen from the metal-working trades emigrated to the United States, according to an Associated Press dispatch. This represents about 60 per cent of the total number lost by Great Britain during that period, which is placed

at 20,509, the remainder seeking other countries. Discussing the matter, the London *Daily Chronicle* says:

Trade unionism in America does not limit output and reduce the skilled to the level of the unskilled. It is because we adopt the opposite method that the engineering trade is in a parlous condition and the workers are so poorly paid.

It is not entirely correct to say that trade unionism in America does not limit output, but its policy has been more progressive than that of the British unions. The reason for the emigration of British mechanics to the United States in the past year was that some thousands of them saw no prospect of a living wage at home. But for the limitation imposed by our laws here many more thousands would have come.

#### Business-Getting Letterheads

**C**OMMERCE Reports, published by the Bureau of Foreign and Domestic Commerce, tells what good letterheads can do in getting business, especially foreign business. It would pay some managers to study their own stationery and see if it comes up to requirements. "What purpose does your letterhead serve?" asks the writer of the article. "Is it meant to impress your correspondent with your own importance or is it a business getter? Does it show your plant in full blast, framed in a long list of directors and department heads, a list of trade association memberships, your trade slogan, and that of the community, and finally a fine-printed statement that your terms are cash and that no responsibility can be accepted for certain contingencies? If so, you have merely blown a horn, not solicited profitable business."

In contrast to this type of letterhead is one giving "your firm name, its leading lines, with a neat marginal reproduction of your firm's 'chop' or trademark, as stenciled on crates, as well as your leading brands and patents, and if you quote telephone, telegraph and cable addresses and also cable code then your correspondent is supplied with data that will be useful for his files and may be expected to lead to further business."

The article lays emphasis upon modern filing systems, installed in constantly increasing numbers by foreign buyers, in which correspondence is carefully cross-indexed for the information that may be gleaned from letterheads of correspondents, and thus preserved where literature may be discarded. "Your trade slogan will never be recorded," says Commerce Reports, "but your cable address, code and leading brands will be the object of frequent reference."

The foreign offices of the Bureau of Foreign and Domestic Commerce receive frequent inquiries as to American producers of certain lines. As commercial directories are apt to be out of date, they are always checked by reference to the office correspondence files. When an emergency order calls for cabling, the letterhead that gives the essential facts is the one most likely to get the business. It should be kept in mind, too, that in many offices both at home and abroad the circular too often fails to get by the office boy, while the letter reaches responsible hands and is almost certain to be filed.



## Relation Between Coke and Pig Iron Markets Commented Upon

WASHINGTON, April 15.—Interesting comment with regard to the relation between beehive coke, by-product coke, and pig iron markets is made in the weekly report of the Geological Survey of April 12, which points out that the relation is now such that in time of depression, such as 1921 and the first three-fourths of 1922, the output of by-product coke exceeded pig iron. In times of a very active iron market, the statement says, the pig iron curve passes the by-product coke curve, and when the two are on a level the signs point to wholesome activity of business midway between boom times and depression. In this connection it is declared that it is significant that the March output of pig iron increased more rapidly than that of by-product coke.

The statement draws a parallel between the trend of pig iron and steel products and the output of by-product coke, declaring that the latter took an upward turn in March, following the upward course of pig iron and steel. The total production of by-product coke for the month was 3,220,000 net tons, an increase of 239,000 tons, or 8 per cent when compared with February. The increase in average daily output, however, was smaller. Against an average of 102,805 tons in February, the daily rate in March was 103,876 tons, an increase of 1 per cent. The ratio of production to capacity was 86.7 per cent. Of the 70 plants in existence, 65 were in operation and five were idle.

The present rate of by-product output, the Survey says, is close to the maximum so far reached in the history of the industry. Production for March of this year was slightly less than that in the corresponding month a year ago, when 3,256,000 tons were made. The accumulative output for the first quarter of 1920, however, exceeds that of 1923 by 1.4 per cent. The record production for a single month is 3,328,000 tons shipped in May, 1923.

Increased production at blast furnaces called forth an increased output of beehive coke. The total for the month of March is estimated at 1,343,000 net tons, an increase of 11 per cent over February, whereas the increase in by-product coke was 8 per cent. Of the total quantity of coke produced in March—4,563,000 tons—70.5 per cent was made in by-product ovens and 29.5 per cent in beehive ovens.

## Judge Gary Returns—Admits Some Concessions on Prices

Judge E. H. Gary, chairman U. S. Steel Corporation, returned Monday from his trip to South America. He is in fine health and spirits. When asked in regard to the report that the Steel Corporation subsidiaries had reduced prices on plates, shapes and bars, or would do so shortly, Judge Gary said:

"There has been no official statement as to reduction of prices and our general schedule is practically unchanged. However, to meet competition, in some instances prices have been slightly reduced, depending upon quantities."

## Mr. Bunnell Purchases Rights to Coke Separating Machine

Sterling H. Bunnell has returned from a visit to England and Germany, where he went to obtain first-hand information of British and German practice in the recovery of the unburned fuel in ashes, the utilization of the incombustible residue in the manufacture of brick, building blocks and stone, and roof and other tiles. As representative of Ellis Miller of New York and associated interests here and abroad, he completed negotiations for the purchase of exclusive American rights to the Kolombus coke separating machine, of which some 450 have been sold to gas plants, railways, metal works and central power stations in Europe since its invention about three years ago. A corporation will be formed immediately to handle the equipment in the

United States. A. M. Hunt, consulting engineer, 350 Madison Avenue, New York, a director of several Western railroads, and connected as engineer with many enterprises in the West, will be the president of the new corporation. Mr. Hunt was for 15 years an officer in the Engineering Corps of the United States Navy and was a member of the Naval Consulting Board during the World War.

## Sheet Statistics for March Indicate More Favorable Conditions

Monthly report of the National Association of Sheet and Tin Plate Manufacturers for last month discloses a substantial increase in sales of the companies reporting over those reported for the previous month. The increase in this item was 62,330 tons, or almost 33 per cent as compared with February. Allowing for the larger number of working days in March than February, there was practically no gain in production. Shipments in March exceeded the sales by about 11,000 tons and unfilled tonnages at the end of the month were 11,256 tons less than those at the end of February. Figures for March, 1923, which are given for comparison purposes, indicate much more favorable conditions in the sheet industry than ruled last month. The figures in net tons follow:

	1924		1923
	March	February	March
Capacity .....	398,000	392,000	425,000
Percentage reporting...	72.6	72.7	70.9
Sales .....	251,411	189,091	325,526
Production .....	278,767	275,118	279,475
Shipments .....	262,497	249,859	287,203
Unfilled tonnage .....	422,889	434,145	619,823
Unshipped stocks .....	82,549	82,362	107,263
Unsold stocks .....	43,888	30,658	29,084

## Increased Employment in Steel Plants

WASHINGTON, April 15.—The iron and steel industry showed an increase of 1.1 per cent in employment in March when compared with February, according to a statement issued today by the Bureau of Labor Statistics, Department of Labor. The increase over March of last year was 8.4 per cent. Employment in all industries reporting showed an increase of 0.2 per cent in March as against February while payroll totals decreased 0.3 per cent.

## The Iron Age and Its Readers

IRON and steel market reporting as first developed by THE IRON AGE has been taken up by other publications in more recent years, with results good, bad and indifferent. As has been indicated in these columns on other occasions, the one duty we have recognized in this work, with all singleness of purpose, is that of getting the facts concerning market transactions and market tendencies and presenting them fairly and accurately. We have no entangling alliances with pig iron or other producers, or with any consumer interests, that would prevent us from giving an impartial review of the situation.

Experience, accuracy and discretion in handling market information are qualities which THE IRON AGE has valued highly in members of its market staff. The 11 editorial workers in the New York office represent a total of 135 years' connection with iron trade journalism, or an average of 12.3 years. Resident editors at six other centers have had an average of 8.8 years in IRON AGE service. These exceptional records of experience account in large part for the high rating that has been given our market reports and for the wide acceptance of IRON AGE quotations as a basis of settlement.

# Iron and Steel Markets

## REDUCTION IN OUTPUT

### Mill Operations Adjusted to Lessened Demand

#### Price Concessions More Common—Market Future Hinges on May Buying

The falling off in new orders for steel that began in March and has been more marked in April has been felt distinctly at the mills in the past week, running schedules in the Pittsburgh and Youngstown districts having been reduced in some cases by 10 to 15 per cent. At Youngstown the slackening has brought ingot production to about 70 per cent of capacity, as against 90 per cent at the peak in March.

Two steel works blast furnaces have stopped at Youngstown and a third will go out in a few days. In the Pittsburgh district the curtailment has taken in three furnaces thus far.

Apart from the cutting down of automobile output, which proves greater than at first reported, there is as yet no important reduction of steel consumption. Steel producers are looking to the May demand to show whether a marked change is developing in the lines that are chief users of steel.

The large orders of January and February are known to have been in part a restocking for spring activities. Many buyers must reenter the market in May if their present scale of output keeps up.

Along with the moderate slowing down at mills, the week has brought reports of lower prices in plates, shapes and bars, but the circumstantial statement that 2.25c., Pittsburgh, for bars and 2.35c. for plates and shapes would be announced by the Steel Corporation has not been confirmed. These prices are \$3 a ton below the recent peak, and for some time have been made on large tonnages, as for steel cars.

Officially the Steel Corporation refers to its general schedule as "practically unchanged" and adds that in some cases, in meeting competition, it has made slight reductions on quantity buying.

Our market reports agree that while minimum prices are not lower than in the past two weeks, quotations that lately were exceptional are now more common.

Chicago has seen some revival of railroad buying, general building activity and oil storage construction. In addition to the Southern Pacific's orders for 131,000 tons of rails are pending purchases of 18,000 tons of angle bars, bolts and spikes.

Orders for 2000 or 3000 cars, of a total program 7600, have been placed by the Chesapeake & Ohio Railroad, which recently took bids on 37,500 tons in a plan to furnish the car builders with low-priced steel. Mills now have been advised that the car builders will buy their own steel. The C. & O. is also in the market for 100 locomotives. The Missouri Pacific has ordered 1000 automobile cars.

Structural steel bookings, exceeding 56,000 tons, were the largest week's total so far this year. Included were 16,300 tons for the new

Palmer House, Chicago, nearly 6000 tons for New York school buildings and 8500 tons for the Western Electric Co. at Kearny, N. J. Counting 11,000 tons for oil tanks in Texas and 14,000 tons for tank work at Baton Rouge fresh inquiries mounted to 47,000 tons.

March sales, according to the Bureau of the Census, covered 184,600 tons, or as much as January and slightly under February. Activity a year ago was much greater, but the monthly average of 1923 is 20,000 tons under the rate of the first quarter of 1924.

The continued suspension of pig iron buying has caused further weakness and prices are down 50c. on all principal grades at Chicago and are held with difficulty in other centers. Blowing out of blast furnaces, which has been begun, affords the only hope of stopping the downward trend.

Selling of Lake ore goes on slowly, following the 80c. reduction in the price, and the outlook is for a smaller ore movement on the Lakes this summer than was estimated.

The situation in coal and coke grows no better. A wage reduction by merchant operators in the Connellsville district has been considered, but no such action by the Steel Corporation is looked for and this fact may prevent action by independents. The present weakness in both coal and coke is due in part to stocks accumulated early in the year as protection against a strike.

With a negligible export demand in most lines, the placing of 20,000 boxes of tin plate for Argentina and 25,000 boxes for Chile stands out, a considerable part going to an Armour plant.

The extension of the Micum contracts governing the output of coal in the Ruhr and the Rhineland means much for industrial stabilization, particularly as being in line with the larger efforts to rationalize reparations. German mining interests had claimed losses too great to continue the stipulations laid down by the Mission Interalliée Controle des Usines et Mines.

Pig iron is lower, THE IRON AGE composite price being now \$22.50, against \$22.59 last week and \$30.79 one year ago. In November last it was as low as \$20.77.

Finished steel is unchanged, THE IRON AGE composite price remaining at 2.703c. per lb., compared with 2.810c. one year ago. The present figure is the lowest in more than a year. The highest in that period was 2.824c., at the end of last April.

## Pittsburgh

### Production Curtailed as Result of Decreased Demand for Iron and Steel

PITTSBURGH, April 15.—To the declining demand for steel and a similar tendency to prices there must now be added an appreciable decline in production. The Youngstown district, which was the first to feel the reaction in business, has seen in the past week a further recession and ingot production now is down to about 70 per cent of capacity as against the recent peak of around 90 per cent. Two steel works blast furnaces have stopped production in that district and another one is likely to go out in the next few days. Ingot



## A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Apr. 15, 1924	Apr. 8, 1924	Mar. 18, 1924	Apr. 17, 1923
No. 2X, Philadelphia.....	\$23.26	\$23.26	\$24.13	\$32.76
No. 2, Valley Furnace.....	22.00	22.00	23.00	31.00
No. 2, Southern, Cin'tit.....	26.55	26.55	26.55	31.05
No. 2, Birmingham, Ala.....	22.50	22.50	22.50	27.00
No. 2 foundry, Chicago.....	24.00	24.50	24.00	32.00
Basic, del'd, eastern Pa.....	21.50	21.50	21.50	30.25
Basic, Valley furnace.....	21.75	21.75	22.00	31.00
Valley Bessemer del. P'gh.....	24.76	24.76	25.26	32.77
Malleable, Chicago.....	24.00	24.50	24.00	32.00
Malleable, Valley.....	22.50	22.50	22.50	31.00
Gray forge, Pittsburgh.....	23.26	23.76	23.76	32.27
L. S. charcoal, Chicago.....	29.15	29.15	29.15	36.65
Ferromanganese, furnace.....	107.50	107.50	107.50	125.00

### Rails, Billets, Etc., Per Gross Ton:

O.-h. rails, heavy, at mill.....	\$43.00	\$43.00	\$43.00	\$43.00
Bess. billets, Pittsburgh.....	40.00	40.00	40.00	45.00
O.-h. billets, Pittsburgh.....	40.00	40.00	40.00	45.00
O.-h. sheet bars, P'gh.....	42.50	42.50	42.50	47.50
Forging billets, base, P'gh.....	45.00	45.00	45.00	52.00
O.-h. billets, Phila.....	45.17	45.17	45.17	50.17
Wire rods, Pittsburgh.....	51.00	51.00	51.00	50.00
Skelp, gr. steel, P'gh, lb.....	2.30	2.30	2.30	2.35
Light rails at mill.....	2.00	2.00	2.00	2.25

### Finished Iron and Steel,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia.....	2.52	2.52	2.57	2.825
Iron bars, Chicago.....	2.35	2.35	2.40	2.60
Steel bars, Pittsburgh.....	2.30	2.30	2.40	2.50
Steel bars, Chicago.....	2.40	2.40	2.50	2.84
Steel bars, New York.....	2.64	2.64	2.74	2.84
Tank plates, Pittsburgh.....	2.30	2.30	2.40	2.50
Tank plates, Chicago.....	2.50	2.50	2.60	2.84
Tank plates, New York.....	2.54	2.54	2.64	2.84
Beams, Pittsburgh.....	2.30	2.30	2.40	2.50
Beams, Chicago.....	2.50	2.50	2.60	2.84
Beams, New York.....	2.59	2.59	2.69	2.84
Steel hoops, Pittsburgh.....	2.90	2.90	2.90	3.30

\*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

The prices in the above table are for domestic delivery and do not necessarily apply to export business.

Sheets, Nails and Wire,	Apr. 15, 1924	Apr. 8, 1924	Mar. 18, 1924	Apr. 17, 1923
Per Lb. to Large Buyers: Cents	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh.....	3.75	3.75	3.75	4.00
Sheets, galv., No. 28, P'gh.....	4.90	4.90	4.90	5.25
Sheets, blue an'd, 9 & 10.....	2.85	2.85	2.90	3.25
Wire nails, Pittsburgh.....	3.00	3.00	3.00	2.90
Plain wire, Pittsburgh.....	2.75	2.75	2.75	2.65
Barbed wire, galv., P'gh.....	3.80	3.80	3.80	3.70
Tin plate, 100-lb. box, P'gh.....	\$5.50	\$5.50	\$5.50	\$6.00

### Old Material, Per Gross Ton:

Carwheels, Chicago.....	\$17.00	\$17.00	\$20.50	\$27.50
Carwheels, Philadelphia.....	17.50	17.50	18.50	26.00
Heavy steel scrap, P'gh.....	16.00	17.00	19.50	25.50
Heavy steel scrap, Phila.....	15.00	15.50	16.50	23.00
Heavy steel scrap, Ch'go.....	14.00	14.50	16.25	22.00
No. 1 cast, Pittsburgh.....	18.50	19.00	20.00	28.00
No. 1 cast, Philadelphia.....	18.00	18.00	18.50	26.00
No. 1 cast, Ch'go (net ton).....	18.50	18.50	20.00	25.50
No. 1 RR. wrot. Phila.....	18.50	18.50	19.00	28.00
No. 1 RR. wrot. Ch'go (net).....	12.75	13.00	13.75	20.50

### Coke, Connellsville,

Per Net Ton at Oven:

Furnace coke, prompt.....	\$3.75	\$3.75	\$4.00	\$6.00
Foundry coke, prompt.....	4.75	4.75	4.75	7.00

### Metals,

Per Lb. to Large Buyers: Cents

Lake copper, New York.....	13.62 1/2	13.75	14.12 1/2	17.25
Electrolytic copper, refinery.....	13.25	13.25	13.75	16.75
Zinc, St. Louis.....	6.07 1/2	6.30	6.45	7.35
Zinc, New York.....	6.42 1/2	6.65	6.80	7.70
Lead, St. Louis.....	7.75	8.25	9.15	8.15
Lead, New York.....	8.12 1/2	8.50	9.15	8.25
Tin (Straita), New York.....	49.25	51.00	53.75	45.30
Antimony (Asiatic), N. Y.....	10.00	10.25	11.00	8.25

### Composite Price, April 15, 1924, Finished Steel, 2.703c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets	April 8, 1924, 2.703c. March 18, 1924, 2.746c. April 17, 1923, 2.810c. 10-year pre-war average, 1.689c.
These products constitute 88 per cent of the United States output of finished steel	

### Composite Price, April 15, 1924, Pig Iron, \$22.50 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham	April 8, 1924, \$22.59 March 18, 1924, 22.77 April 17, 1923, 30.79 10-year pre-war average, 15.72
---	--

production in Pittsburgh also has undergone a definite decline since a week ago. The principal steel-making subsidiary of the Steel Corporation this week is operating about 87 per cent of ingot capacity as against the recent maximum of 96 per cent, and the leading local independent is at about an 85 per cent gait as compared with slightly above 90 per cent recently reached. One Clairton furnace of the Carnegie Steel Co. has been blown out for relining and with the suspension of one Farrell and one of the Ohio furnaces of this company, it now has in production 47 stacks out of a total of 58. The Jones & Laughlin Steel Corporation has banked one of its Eliza furnaces.

Steel business has suffered a further contraction since a week ago, and business now is best described as dull. Those products finding principal use by the automotive industry are particularly slow of sale. While there are reports that better weather has stimulated purchases of automobiles, the accumulation of

cars has not been reduced sufficiently to create hopes of an immediate upward revision in automobile reduction schedules. A report emanating from Wall Street to the effect that stocks of cars throughout the country aggregated 1,650,000 is disputed in the steel trade here. This report placed the number of unsold Ford cars at 650,000, which on a daily production rate of 8000 cars would mean about 80 days' output, and since there were not many more working days than that in the first three months of the year, there is the implication that the Ford Motor Co. sold practically none of the cars produced during the first quarter. Since production of other makes of automobiles this year has not been over 1,000,000 cars, it is equally hard to believe that so few have passed from the hands of manufacturers and dealers.

Recession in the demand for other finished products is almost as marked as that in automobile steel, and while a good many explanations have been made, the

fundamental one is probably that production over the first quarter of this year has outstripped consumption and a period sufficient to permit the digestion of supplies was necessary to restore a balance. Developments in Washington, of course, have had their effect upon business sentiment, but weather conditions have been no small factor in the steel situation, since part of the trouble in the automotive industry is due to the fact that the industry prepared for an early spring and has suffered because the season has been so late. The weather has delayed building construction and has set back farm work to an extent that has deprived the wire industry of much spring business and thrown some doubt over crop prospects and the demand for tin plate for containers. The weather also has been a factor in holding in check oil well drilling and the incident demand for oil well pipe.

Steel prices still are very irregular, with the independent makers most badly in need of orders and disposed to name attractive figures to secure them. There have been reports that Carnegie Steel Co. is about to announce a price of 2.25c., base Pittsburgh, for steel bars and 2.35c., Pittsburgh, for plates and shapes, thus recognizing competition, but the word at the local offices of the company is that there is no disposition to write down prices. A report that the American Sheet & Tin Plate Co. had or is about to reduce sheet prices \$5 a ton likewise finds no confirmation.

It is doubtful if there ever before was so little demand for pig iron as is the case at present and prices are indeterminate. Consumptive demand for scrap is almost nil and prices are weak in the efforts of dealers to find an outlet for material which must be sold. All of the advance in scrap which followed the purchases late last year by the Carnegie Steel Co. has disappeared. Practically no market exists for coal or coke.

**Pig Iron.**—If there ever before was a week of lighter dealings than the past one, those now active in the local trade do not recall it. None of the producers or brokers has had any inquiries worthy of note, and sales have been entirely of small lots and not a great many of these. Local roll maker who recently inquired for 300 tons of foundry iron was able to place this at a very low price, but it is understood that the business went to steel companies on a reciprocal basis. There is no doubt that lower prices than are quoted would come out with the appearance of sizable inquiries, but in the lack of such, and also in the absence of sales, the quoting of any change from last week's prices would amount to nothing more than a guess.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being \$1.76 per gross ton:

Basic .....	\$21.75 to \$22.00
Bessemer .....	23.00
Gray forge .....	22.00 to 22.50
No. 2 foundry .....	22.00 to 23.00
No. 3 foundry .....	22.00 to 22.50
Malleable .....	22.50
Low phosphorus, copper free....	29.00

**Ferroalloys.**—Interest in the market on the part of consumers is exceedingly limited, but there seems to be no pressure for business and recent prices still are quoted. The market appears to be firm on ferromanganese, with both domestic and British material still priced at \$107.50. Some German material is offered at \$105, c.i.f. Atlantic seaboard, duty paid, but this runs 76 to 80 per cent manganese; hence the low price. Spiegeleisen probably could be bought for less than quotations if the inquiry involved a fair-sized tonnage. Prices are given on page 1189.

**Semi-Finished Steel.**—There is practically no open market demand; certainly not enough to provide a definite line on prices. Mills here and in Youngstown still are quoting \$40 for billets and \$42.50 for sheet bars, but all could take on more business than they are getting and adherence to those prices finds explanation chiefly in the fact that fresh tonnages could not be secured at those prices and acceptance of less would mean the revision of contract prices. It is reported, but cannot be confirmed, that sheet bars have been sold at \$40, Pittsburgh. It is still unexplained why sheets are being sold so much under the bases that were supposed to represent only a fair profit at \$42.50 for sheet bars. Even the low prices coming out on sheets are not pro-

viding the mills with anywhere nearly full schedules and this naturally restricts specifications by non-integrated mills. Dullness in strips is likewise keeping down specifications against billet and slab contracts. Not enough demand exists to test the prices on forging billets, skelp or rods. The past week has seen some recession in steel works activities in this and nearby districts, the loss from the recent peak being about 10 per cent in Pittsburgh and almost 20 per cent in the Valley districts. Prices are given on page 1189.

**Wire Products.**—While better weather conditions have resulted in some improvement in business, there is no forward buying worthy of note and the mills are meeting demands so readily that it is almost impossible for them to accumulate backlogs. Prices are holding well, except that it is necessary for local mills to equalize freights to get business outside of the zones where Pittsburgh has the freight advantage. Some local makers are three to four weeks behind on 4-point barbed wire and small nails, but otherwise are abreast of their obligations and in some instances well ahead of them through the existence of liberal mill stocks. Prices are given in page 1188.

**Steel Rails.**—Practically no market exists for light rails and while recent prices still are quoted, there is considerable doubt that they would be insisted upon if there was an inquiry of any considerable size. Coal is not selling, since so many users stocked up in anticipation of a miners' strike and are drawing upon these stocks. The result is that soft coal mine operations in this and nearby districts are not over 30 per cent of capacity. This is the explanation for the lack of rail demand.

We quote light rails: rolled from billets, 2c. base (25-lb. to 45-lb.); rolled from rail steel, 1.85c. to 1.90c. base (12-lb. to 45-lb.), f.o.b. mill; standard rails, \$43 per gross ton mill, for Bessemer and open-hearth sections.

**Tubular Goods.**—Pipe business still is good by comparison with other forms of finished steel; but it is no tax upon capacity and some makers find it something of an effort to secure sufficient specifications to maintain operations. More favorable weather is believed to be causing a better movement of pipe for building work from the jobbers' hands, but this is not the case locally, since cases are reported where 63 per cent off list has been quoted on the base sizes of merchant pipe by local jobbers, as against 63 and 5 per cent, the mill base to jobbers, and 59 per cent, which is supposed to be the jobbing discount. Movement of oil country pipe into consumption is retarded by the soft condition of the roads in the oil producing districts and also and chiefly because the demand for oil is not sufficiently heavy to encourage drilling. In most fields, the small operators are financially embarrassed. Statement that quoted discounts on boiler tubes have little relation to what is actually being done is mild. The market is weak and unsettled to such a degree that it would be impossible at the moment to formulate a price schedule that would be representative. Cuts of as much as \$10 a ton from the prices indicated by the quoted discounts are noted. Discounts are given on page 1188.

**Sheets.**—The market is weak, particularly with mills in the Youngstown district whose anxiety for business is bringing even larger concessions than recently have been made. As low as 3.70c., base, has been done on black sheets and galvanized sheets have sold down to 4.80c., base, in the struggle of mills to keep their customers. In general, there are too many producers seeking a share of what is a light and purely hand-to-mouth demand for prices to show much strength. The American Sheet & Tin Plate Co. still is holding to the old prices and is getting some business at these levels, but among the independent companies there are few if any who now are quoting more than 3.75c., base, for black, 4.90c., base for galvanized and 2.90c., base for blue annealed. Reports from consuming quarters intimate that less than 5.35c., base, is being done on regular automobile body sheets, but this is denied by makers of this grade and it is also claimed that prices of long terms and tin mill black plate are well observed. The decline in the production rate of the automotive industry has been felt more keenly in sheets lately than last



week or the week before and it is evident that sales of stocked cars have not increased sufficiently to bring about an increase in production schedules. Independent companies are operating about 75 per cent of capacity and that also is practically the sheet mill operations of the American Sheet & Tin Plate Co. Prices are given on page 1188.

**Tin Plate**—The leading interest last week operated 95 per cent of its tin plate mills, but congestion of stocks in the Shenango Valley plants probably means a lower rate this week through the shutting down of some mills and the working of fewer turns at the plants where all mills are under power. As a general rule, the weather has been more favorable to production than to shipments and with mill warehouse stocks reaching big proportions, it looks as though some curtailment of production is likely for want of storage space. Weather has retarded planting in most parts of the country and this has created doubts as to the requirements of tin plate for food containers. In view of the decline in pig tin and the improbability of a shortage of packers' can material, there is a growing belief that there will be no advance for last half tonnages from the present base of \$5.50 per base box, Pittsburgh, for standard cokes.

**Cold-Finished Steel Bars and Shafting**—The automotive industry is such a big factor in the consumption of this product that its recession in production, which if based on steel orders, is not much more than 50 per cent of the recent peak rate, is heavily felt. Both orders and specifications are light. This is not disturbing prices to any noticeable extent, probably because there is not enough business passing to test the market. We quote the market at 3c., base, Pittsburgh, with freight equalized with Chicago in competitive territory, and ground shafting at 3.40c., base, f.o.b. mill.

**Hot-Rolled Flats**—Prices on the hoop sizes hold fairly well, since there is a fair demand for that material and not many mills are anxious for orders. In bands, there are prices as low as 2.75c., base, and on strips, the prevailing price is 2.75c. base. On wide strips, however, that price is maximum, since open capacity is large and there is pretty keen competition for business. Prices are given on page 1188.

**Cold-Rolled Strips**—There is no longer much pretense that more than 4.75c., base, Pittsburgh, can be obtained on this product, but local producers deny having gone below that price, although admitting that they have lost business. It is something of a task for mills to maintain rolling schedules on account of the suspensions from the automobile manufacturers.

**Track Supplies**—The market here is very quiet as far as new orders are concerned and prices show a yielding tendency. A price of 2.55c. has appeared on tie plates and those makers of small spikes still quoting them at \$3.50, base, per 100 lb., are not turning down business at a lower price. Prices are given on page 1188.

**Iron and Steel Bars**—As a sales basis for steel bars, 2.40c., base Pittsburgh, has largely disappeared. The Steel Corporation still is naming that price, but independents generally are down to 2.30c. and there are reports that as low as 2.25c. has been quoted. Orders are few and small and specifications against contracts, particularly from makers of cold-finished steel bars and shafting, are extremely light. There has been no formal change in iron bar prices, but it is believed that an attractive order would induce concessions.

We quote soft steel bars, rolled from billets, at 2.30c. to 2.40c. base; bars for cold finishing or screw stock analysis, \$3 per ton over base; reinforcing bars, rolled from billets, 2.30c. to 2.40c. base; refined iron bars, 3.15c. to 3.25c. base, in carload lots or more, f.o.b. Pittsburgh.

**Structural Material**—The market here is quotable from 2.30c. to 2.40c. on large structural beams, but hardly enough business is being done to clearly define prices. The report that the Carnegie Steel Co. would announce a price of 2.35c. finds no confirmation, but naming of that price on recent railroad inquiries would indicate that as the price idea of local mills. Local

fabricating companies have had a quiet week as regards both awards and inquiries. Plain material prices are given on page 1188.

**Plates**—The Steel Corporation plate mills in this district are well occupied and its live bookings are in plates heavier than in most other finished products. The reverse is true of most of the independent companies. This explains the variation in prices and in the different stand on prices of the mills. Locally, the market is quotable from 2.30c. to 2.40c., but there is so little business that neither price is well established. Prices are given on page 1188.

**Bolts, Nuts and Rivets**—Business still is spasmodic and generally unsatisfactory. Competition for orders still is keen and prices are irregular and easy. Prices and discounts are given on page 1188.

**Coke and Coal**—There is no occasion to change prices from those of a week ago. Production of coke is on a dwindling scale, but there seems to be enough for requirements, which are very light, and we continue spot furnace coke at \$3.75 to \$4 per net ton at ovens and spot foundry grade from \$4.75 to \$5.50 per net ton at ovens. Talk of a wage reduction in the Connellsville district is subsiding because it is realized that lower prices, which lower wages might permit, would not help business. The coal business still is practically at a standstill and those in need of supplies have little trouble in covering them at the low prices of the past few weeks. We quote mine run steam coal from \$1.50 to \$2 per net ton at mines, and mine run coking coal from \$1.60 to \$2 and mine run gas coal from \$2 to \$2.25. Slack grade still is very firm in price, not because of a big demand, but because so little of this grade is available, due to the fact that there is not much demand for lump coal, the preparation of which produces slack. We quote steam slack at \$1.50 and gas slack at \$1.75.

**Old Material**—Practically no market exists and prices given are merely those that it is believed might be done if the opportunity for sales was presented. Most of the sales are of material that has been rejected or is an overshipment which has been refused. Shippers are obliged to assume demurrage or the cost of moving the material elsewhere and in most cases are accepting whatever is offered rather than assume such expense. There is some prospect of a demand from the steel foundries which have orders for railroad car castings, but declining operating rates of steel plants suggest no immediate awakening of buying interest from that source. Dealers are making no effort to hold up prices, because at a little below today's prices they would begin purchases for their yards. The market is weak but probably not so weak that it would not stiffen with any increase in steel plant buying, because offerings are large only in the sense that they exceed today's requirements. Sales of No. 1 cast at \$19.50, Scottdale, Pa., are reported. The Norfolk & Western Railroad will receive bids until noon, April 16, on 7440 gross tons of scrap.

We quote for delivery to consumers' mill in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton	
Heavy melting steel.....	\$16.00 to \$16.50
No. 1 cast, cupola size.....	18.50 to 19.00
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa. ....	19.00 to 19.50
Compressed sheet steel.....	14.50 to 15.00
Bundled sheets, sides and ends..	13.50 to 14.00
Railroad knuckles and couplers...	18.50 to 19.00
Railroad coil and leaf springs...	18.50 to 19.00
Low phosphorus blooms and billet ends .....	19.00 to 19.50
Low phosphorus plate and other material .....	18.50 to 19.00
Railroad malleable .....	16.50 to 17.00
Steel car axles .....	18.50 to 19.00
Cast iron wheels .....	17.00 to 17.50
Rolled steel wheels .....	18.50 to 19.00
Machine shop turnings .....	13.00
Sheet bar crops.....	17.50 to 18.00
Heavy steel axle turnings.....	15.50 to 16.00
Short shoveling turnings .....	13.00 to 13.50
Heavy breakable cast .....	17.00 to 17.50
Stove plate .....	14.00 to 14.50
Cast iron borings .....	13.00 to 13.50
No. 1 railroad wrought.....	13.00 to 13.50
No. 2 railroad wrought .....	16.00 to 16.50

## Chicago

### Railroad Buying Increased, But General Buying Shows Smaller Total

CHICAGO, April 15.—The week has brought forth evidences of a revival of railroad buying, general building activity and oil storage construction, all of them important sources of steel tonnage. The Southern Pacific has distributed orders for 131,000 tons of rails, while the Chesapeake & Ohio has closed for 2000 cars and is on the verge of placing 5600 more. A Texas tank inquiry from the Royal Dutch Shell interests involves 11,000 tons of plates and shapes. Locally the contract for the steel for the New Palmer House, amounting to 16,300 tons, has been awarded to the leading fabricator.

In the face of these favorable developments, the automobile industry is still operating on a curtailed basis pending the sale of accumulated stocks of cars, and the general aggregate of new steel business from all sources is diminishing. Recent unsettlement in prices has naturally caused buyers to adopt a more conservative policy, which would seem to account for the current tendency to limit orders to immediate requirements. At the same time, the view is advanced that banking interests are encouraging the postponement of the projected programs of their clients until third quarter in order to stimulate activity just prior to election. This is probably a fanciful idea, but it is nevertheless an interesting coincidence that a number of important railroads have practically abandoned plans for additions and betterments announced at the first of the year. It is also true that many of the freight cars ordered in the first quarter call for extended steel deliveries ranging from 60 to 90 days, suggesting a desire to insure full operations among car builders later in the year. However lacking these deductions may be in foundations of fact, they are typical of the speculation now rife as to the whys and wherefores of a changed market situation.

Current uncertainty is reflected in prices of finished steel which are in a state of flux both here and at Pittsburgh. Sheets are exceedingly weak, but signs of stability are again being shown by plates, shapes and bars and the opinion is gaining ground that plates and shapes will strike bottom at 2.35c., Chicago, and bars at 2.25c., Chicago, or possibly at a level \$1 higher. Local mill operations have receded slightly, but hardly enough to warrant comment. Among the primary materials, scrap continues to decline and pig iron has dropped a half dollar.

**Ferroalloys.**—Activity in the ferroalloys has been confined to carload inquiries.

We quote 80 per cent ferromanganese, \$115.06, delivered; 50 per cent ferrosilicon, \$75, delivered; spiegeleisen, 18 to 22 per cent, \$42.56 to \$43.56, delivered.

**Cast-Iron Pipe.**—The United States Cast Iron Pipe & Foundry Co. has booked 5446 tons of 36- and 48-in. for Chicago and 3295 tons of large diameter pipe and 175 tons of special castings for Milwaukee. The quotation at Milwaukee indicates that large pipe prices are more flexible than on the commoner sizes. The National Cast Iron Pipe Co. has been awarded 320 tons for Rock Island, Ill., and 100 tons for Michigan City, Ind. Barberton, Ohio, will take revised bids on 2350 tons, April 21. Metropolis, Ill., will receive tenders April 24 on 800 tons of 4- to 10-in., inclusive. Niles Center, Ill., has taken figures on 800 tons of 6-, 8- and 12-in.

We quote per net ton, f.o.b. Chicago, as follows: Water pipe, 4-in., \$60.20 to \$62.20; 6-in. to 10-in., inclusive, \$56.20 to \$58.20; 12-in. and above, \$55.70 to \$56.20; class A and gas pipe, \$5 extra.

**Pig Iron.**—Northern iron is now generally quotable at \$24 to \$24.50, base, Chicago furnace, although in view

of the small amount of current business there has been little inducement to offer important concessions. At South Bend, Ind., a point in so-called competitive territory, a melter placed 250 tons of foundry with a Lake Erie furnace. Outside of this transaction sales have been largely confined to carload lots. Shipments from Northern furnaces in March exceeded output and they have held up well thus far this month, notwithstanding a few recent suspensions from foundries serving the automobile industry. Melters in this section are operating at from 50 to 65 per cent of capacity, according to various estimates and at the present rate of melt have no more than 30 days' supply of iron contracted for. Spring weather is counted on to stimulate automobile sales and thereby to revive activity in the only industry which has suffered any material reaction. On the basis of recent sales low phosphorus has declined.

Quotations on Northern foundry high phosphorus malleable and basic irons are f.o.b. local furnaces and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards or, when so indicated, f.o.b. furnace other than local.

Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago..	\$29.15
Northern coke, No. 1, sil. 2.25 to 2.75 .....	\$24.50 to 25.00
Northern coke, foundry, No. 2, sil. 1.75 to 2.25 .....	24.00 to 24.50
Malleable, not over 2.25 sil. ....	24.00 to 24.50
Basic .....	24.00 to 24.50
High phosphorus .....	24.00 to 24.50
Southern No. 2 .....	28.51 to 29.01
Low phos., sil. 1 to 2 per cent, copper free .....	31.00 to 32.00
Silvery, sil. 8 per cent .....	37.29
Electric ferrosilicon, 14 to 16 per cent .....	45.42

**Plates.**—The McCorkle Pipe Line Co., a subsidiary of the Royal Dutch Shell interests, with headquarters at Fort Worth, Texas, has put out an inquiry for tanks, involving 10,000 tons of plates and 1000 tons of structural shapes. The storage tanks, most of which will be erected in Texas, will serve a pipe line which will require a large tonnage of pipe. Heavy railroad car buying is again in prospect. The Chesapeake & Ohio has practically completed the distribution of 7600 cars among four car builders. The Missouri Pacific has ordered 1000 automobile cars from the Pennsylvania Car Co. An unusual feature of recent car buying is that extended deliveries, ranging from 60 to 90 days, have been asked on the steel. This means that the mills are not now getting the full benefit of this tonnage. During the week, however, a local producer booked 15,000 tons of car steel in new business and 20,000 tons in the form of specifications against prior obligations. On the whole, plate mill commitments are diminishing and prices are growing easier. Buyers are experiencing little difficulty in obtaining material at 2.50c., Chicago, and it is not unlikely that even better than this may be done.

The mill quotation is 2.50c., Chicago Jobbers quote 3.30c. for plates out of stock.

**Bars.**—Soft steel bars are quieter, but this is not surprising in view of the propensity of buyers to hold aloof from the market when prices are growing easier. Specifications are lighter from concrete bar dealers as well as from automobile trade. The ruling price level appears to be 2.40c., Chicago, but in some instances better than this is being done. Prices on bar iron and rail steel bars have undergone no further change, but they will doubtless be affected if soft steel fails to show a recovery of strength.

Mill prices are: Mild steel bars, 2.40c., Chicago; common bar iron, 2.35c. to 2.40c., Chicago; rail steel, 2.30c., Chicago mill.

Jobbers quote 3.20c. for steel bars out of warehouse. The warehouse quotations on cold-rolled steel bars and shafting are 4c. for rounds and 4.50c. for flats, squares and hexagons.

Jobbers quote hard and medium deformed steel bars at 2.75c. base; hoops, 4.45c.; bands, 3.95c.

**Structural Material.**—There have been a number of large fabricating awards recently, the outstanding letting having been 16,300 tons for the New Palmer House, Chicago, which went to the American Bridge Co. The chances are considered good for the early placing of an equal tonnage for the Stevens Hotel, Chicago. The New Republic Bank Building, Dallas,



Texas, requiring 2000 tons, was awarded to the Mosher Steel & Machinery Co., and 1000 tons of bridge work for the Indiana Harbor Belt Railroad was placed with the American Bridge Co. Among new local prospects is a 40-story jewelers' building to be erected in the loop district. Early action is expected on a large addition to the Hotel Sherman, Chicago, and late advices indicate that the Ford Motor Co. will double the size of the plant which it recently completed at Hegewisch, Ill. In the aggregate, however, actual bookings of fabricators have been declining with the result that current bids are keenly competitive. On the New Palmer House less than \$83 delivered is understood to have been quoted. Plain material is responding to the changed market situation and is now readily available at 2.50c., Chicago, with the possibility that even better might be done.

The mill quotation on plain material is 2.50c., Chicago. Jobbers quote 3.30c. for plain material out of warehouse.

**Bolts and Nuts**—Discounts are exceedingly weak, as evidenced by extreme concessions recently reported, but owing to a lack of consistency among sellers, it cannot yet be said that the general market level is lower. This fact is due in large part to the small amount of new business current. Efforts are still being made to adhere to the discounts on page 1188, which for this district are based f.o.b. Chicago.

Jobbers quote structural rivets, 3.75c.; boiler rivets, 3.95c.; machine bolts up to  $\frac{3}{4}$  x 4 in., 55 and 5 per cent off; larger sizes, 55 and 5 off; carriage bolts up to  $\frac{3}{4}$  x 6 in., 50 and 5 off; larger sizes, 50 and 5 off; hot pressed nuts, squares and hexagons, tapped, \$3.50 off; blank nuts, \$3.50 off; coach or lag screws, gimlet points, square heads, 60 and 5 per cent off.

**Rails and Track Supplies**—The Southern Pacific has placed 131,245 tons of rails, divided as follows: 63,000 tons to Tennessee Coal, Iron & Railroad Co.; 60,745 tons to Colorado Fuel & Iron Co., and 7500 tons to Inland Steel Co. Angle bars, bolts and spikes, amounting to about 18,000 tons, will be bought by the road's purchasing agents at New Orleans and San Francisco. The Chesapeake & Ohio is inquiring for 2400 tons of tie plates and the Nickel Plate is about to place the remainder of its tie plate requirements. Local mills are running full in their spike and bolt departments, but are not so busy on tie plates. There is little or no demand for light rails and the quotation of 2.25c., local mill, remains nominal.

Standard Bessemer and open-hearth rails, \$43; light rails, rolled from billets, 2.25c., f.o.b. makers' mills.

Standard railroad spikes, 3.10c. mill; track bolts with square nuts, 4.10c. mill; steel tie plates, 2.60c., f.o.b. mill; angle bars, 2.75c., f.o.b. mill.

Jobbers quote standard spikes out of warehouse at 3.75c. base, and track bolts, 4.75c. base.

**Wire Products**—New business in common products has shown moderate improvement with the coming of more favorable weather. Buyers, however, see no object in piling stocks so long as mill shipments are prompt and price advances are unlikely. Even if other market factors were not considered, the approach of summer, which is always a quiet period in the wire business, would be considered as insurance against price changes of any consequence. Manufacturing users are more conservative in their attitude and this is particularly true of those serving the automobile industry either directly or indirectly. For mill prices, see finished iron and steel, f.o.b. Pittsburgh, page 1188.

We quote warehouse prices f.o.b. Chicago: No. 6 to No. 9 bright basic wire, \$3.90 per 100 lb.; extra for black annealed wire, 15c. per 100 lb.; common wire nails, 3.65c. to 3.80c. per 100 lb.; cement coated nails, 3.10c. to 3.25c. per keg.

**Reinforcing Bars**—Bookings in concrete bars are declining and accordingly competition is increasingly keen. On the other hand, a large amount of work is still pending and new projects are coming up for bids. The Barry apartment building, Chicago, will require 1000 tons, while a plant for the W. F. Hall Printing Co., Chicago, will take 600 tons. The ruling warehouse quotation is 2.75c., Chicago, although there are frequent concessions below that figure, particularly when specifications are attractive. The bars for the new Palmer

House, Chicago, amounting to 1000 tons, are expected to be placed next week.

Lettings include:

Snelling-Mendota bridge, Minneapolis, 1000 tons to American System of Reinforcing.

Barry Apartment, Barry Avenue and Sheridan Road, Chicago, 700 tons to American System of Reinforcing.

Soo Line ore dock, Ashland, Wis., 809 tons to Cowin & Co.

Western Shade Cloth Co. plant, Chicago, 500 tons to Kalman Steel Co.

Illinois State road work, 200 tons to Concrete Steel Co.

Orrington Hotel, Evanston, Ill., 160 tons to Kalman Steel Co.

City of Minneapolis, Minn., 117 tons to C. A. P. Turner Co.

Pending business includes:

W. F. Hall Printing Co. plant, Chicago, 600 tons.

Uptown Theater, Lawrence Avenue and Broadway, Chicago, 300 tons.

Hardin & Lavin Co. warehouse, Chicago, 100 tons.

Norfolk & Western Railroad coaling station, Prichard, Va., 100 tons.

**Sheets**—The extreme weakness of prices has tended to frighten buyers out of the market. On black as low as 3.55c. base, Pittsburgh, has been done, while the lowest reported on blue annealed and galvanized are 2.80c. and 4.75c. base, Pittsburgh, respectively. The bulk of current business, however, is going at about \$2 above these extreme figures. Recent inquiries for light black sheets for Japan aggregate 2400 tons.

Mill quotations are 3.65c. to 3.85c. for No. 28 black, 2.85c. to 3c. for No. 10 blue annealed and 4.85c. to 5c. for No. 28 galvanized, all being Pittsburgh prices, subject to a freight rate to Chicago of 34c. per 100 lb.

Jobbers quote f.o.b. Chicago: 4c. for blue annealed; 4.70c. for black and 5.60c. for galvanized.

**Old Material**—Although the last purchase of heavy melting, amounting to about 12,000 tons, was made at \$15 per gross ton, delivered, the market is now lower than that, as evidenced by sales of scrap producers and dealers. Consumer buying in all grades is hand-to-mouth and falls short of the available supply with the result that prices are weak and in some instances lower than a week ago. Expiring orders have not yet been entirely filled. Railroad offerings include Chesapeake & Ohio, 13,500 tons; Illinois Central, 6000 tons; Rock Island, 6700 tons; Canadian National, 2200 tons; Northern Pacific, 2000 tons; Soo Line, 800 tons.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Iron rails	\$17.50 to \$18.00
Cast iron car wheels	17.00 to 17.50
Relaying rails, 56 and 60 lb.	26.00 to 27.00
Relaying rails, 65 lb. and heavier	27.00 to 32.00
Forged steel car wheels	17.50 to 18.00
Railroad tires, charging box size	17.50 to 18.00
Railroad leaf springs, cut apart	18.00 to 18.50
Rails for rolling	18.50 to 17.00
Steel rails, less than 3 ft.	17.00 to 17.50
Heavy melting steel	14.00 to 14.50
Frogs, switches and guards cut apart	14.50 to 15.00
Shoveling steel	13.75 to 14.25
Drop forge flashings	11.50 to 12.00
Hydraulic compressed sheets	12.50 to 13.00
Axle turnings	13.50 to 14.00
Steel angle bars	16.50 to 17.00
Steel knuckles and couplers	17.50 to 18.00
Coil springs	19.00 to 19.50
Low phos. punchings	16.00 to 16.50
Machine shop turnings	8.00 to 8.50
Cast borings	11.00 to 11.50
Short shoveling turnings	11.00 to 11.50
Railroad malleable	19.50 to 20.00
Agricultural malleable	18.50 to 19.00

Per Net Ton	
Iron angle and splice bars	17.00 to 17.50
Iron arch bars and transoms	17.50 to 18.00
Iron car axles	25.50 to 26.00
Steel car axles	17.00 to 17.50
No. 1 busheling	10.75 to 11.25
No. 2 busheling	8.50 to 9.00
Cut forge	12.50 to 13.00
Pipes and flues	8.00 to 8.50
No. 1 railroad wrought	12.75 to 13.25
No. 2 railroad wrought	12.50 to 13.00
No. 1 machinery cast	18.50 to 19.00
No. 1 railroad cast	18.00 to 18.50
No. 1 agricultural cast	18.00 to 18.50
Locomotive tires, smooth	15.25 to 15.75
Stove plate	15.50 to 16.00
Grate bars	14.50 to 15.00
Brake shoes	15.00 to 15.50

## New York

### Increased Activity in Structural Steel— General Buying Dull

NEW YORK, April 15.—Sales of the past week have amounted to 3000 or 4000 tons and inquiries for about 9000 tons, nearly all for second quarter, are pending, but the market drags and prices are untested. The hesitancy of important buyers is shown in the attitude of the Worthington Pump Corporation, which has not yet placed the 1750 tons for June and July delivery. The Singer Mfg. Co., whose furnace is banked, is inquiring for 1000 to 2000 tons of iron, silicon 2.25 to 2.50, for its plant at Elizabethport, N. J. Inquiries from Connecticut include one for 1500 tons, one for 1000 tons, two for 400 tons each, and one for 500 tons. Prices are not strong and range at Buffalo from \$21 to \$21.50, while in eastern Pennsylvania \$22 is still the prevailing quotation. Reports from the Central West indicate that as low as \$21.50, Valley, can be done on foundry iron. The New York Central, which has been in the market for 500 tons, is understood to have concluded not to buy that tonnage at present, and will continue to purchase from hand to mouth.

We quote delivered in the New York district as follows, having added to furnace price \$2.27 freight from eastern Pennsylvania, \$4.91 from Buffalo and \$5.44 from Virginia:

East. Pa. No. 1X fdy., sil. 2.75 to 3.25	.....	\$25.27 to \$25.77
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	.....	24.77 to 25.27
East. Pa. No. 2, sil. 1.75 to 2.25	.....	24.27 to 24.77
Buffalo, sil. 1.75 to 2.25	.....	25.91 to 26.41
No. 2X Virginia, sil. 2.25 to 2.75	.....	31.44
No. 2 Virginia, sil. 1.75 to 2.25	.....	30.44

**Ferroalloys.**—Demand for ferromanganese is still confined to carload and small lots of which there have been moderate sales at regular prices. One inquiry for 150 tons is noted. A feature of the market still is the desire of consumers to obtain the material as early as possible. The spiegeleisen market is of a similar character, the buying being confined to small lots. The British product continues to be a factor and recently domestic prices have been reduced to meet the British competition in some cases. The domestic alloy is quoted at \$35 to \$37, furnace, depending upon the quality and grade. Official statistics furnished by the Department of Commerce show that 4669 gross tons of spiegeleisen were imported in 1923, with 130 tons and 110 tons brought in in January and February, respectively, this year. There have been no developments in the 50 per cent ferrosilicon nor in the standard ferrochromium markets.

**Cast-Iron Pipe.**—Makers are reported booked ahead for from two to three months and purchasing by privately owned water and gas companies continues fairly large. Municipal buying, however, although fairly good in other districts, has not yet appeared to any extent in the New England district. Prices are holding fairly firm. We quote per net ton, f.o.b. New York, in carload lots, as follows: 6-in. and larger, \$61.60 to \$63.60; 4-in. and 5-in., \$66.60 to \$68.60; 3-in., \$76.60 to \$78.60, with \$5 additional for Class A and gas pipe. Jobbers handling soil pipe are evidently still receiving shipments of material bought at prices lower than the current market. While this is usually a season of great activity in purchases, buying is reported light and there are rumors of shading. Makers are probably booked ahead for about two months. We quote discounts of both Southern and Northern makers, f.o.b. New York, as follows: 6-in., 29½ to 30½ per cent off list; heavy, 39½ to 40½ per cent off list.

**Warehouse Business.**—Business still consists largely of small orders, which are sufficiently numerous, with most sellers to show a fair volume of sales. Although there is reported a slight tendency to shade bar prices, as a result of the keen competition for business, quotations on most products are holding better than might be expected in view of the mill situation. Black and galvanized sheets particularly are apparently subject to little or no shading of the price of 4.85c. and 5.85c. per

lb. base, respectively. Maintenance of small stocks is probably not confined to the consumers, warehouse stocks generally seeming to run fairly low. Sellers of wrought iron and steel pipe report a slight improvement in demand as the spring advances, but purchases are small. We quote prices on page 1202.

**Finished Iron and Steel.**—Structural steel business was the conspicuous feature in an otherwise dull market. Following the check to new enterprises given by the disappointing indifference of Congress to business welfare, buyers have in greater numbers taken the attitude that lower prices are in order. The result is purchases in smallest possible amounts with demand for substantially immediate delivery. The late winter has evidently had a larger influence than commonly appreciated in postponing spring buying of the farmers and in turn in the selling to distributors. Some of the needs may now be left unsatisfied long after the opening up of the roads and branch highways. At the moment buying of mill products seems not to be more than two-thirds of that a month ago. As to important material less concern is shown, partly because the recent movement of European exchange has been against favorable purchasing and partly because material arriving has been imperfectly bundled or handled and has entailed considerable expense in rehandling, assorting and warehousing. Prices continue highly variable, depending to an unusual degree on the mill quoting and size of inquiry. Producers appear confident that in a month's time the course of the market will be clarified.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.64c. to 2.69c.; plates, 2.54c. to 2.59c.; structural shapes, 2.59c. to 2.69c.; bar iron, 2.54c.

**Coke.**—Although close to 50 per cent of the ovens in the Connellsville district are reported out, coke prices continue low. Standard furnace is obtainable at from \$5 to \$5.25, with distress tonnage offered at \$4.75 per ton. Standard furnace is \$4 to \$4.25, with distress tonnages at 25c. per ton less. By-product is quoted at \$10.41, Newark and Jersey City, N. J.

**Old Material.**—The market is extremely quiet and the downward movement of prices continues. For heavy melting steel, \$14.50 and, in some cases, \$15 being paid, delivered eastern Pennsylvania. Borings and turnings are weak at \$13 and in some cases \$13.50 per ton delivered, and machine shop turnings are also bringing \$13 to \$13.50, eastern Pennsylvania. Stove plate continues unchanged at \$15 per ton delivered to consumers in Harrisburg or Phoenixville, Pa., but for delivery to a New Jersey user, \$13.50 and \$13.75 are the ruling prices paid. Plenty of material is reported available at these prices but new contracts by consumers are scarce.

Buying prices per gross ton New York follow:

Heavy melting steel, yard	.....	\$11.00 to \$11.50
Steel rails, short lengths, or equivalent	.....	11.75 to 12.25
Rails for rolling	.....	16.00 to 16.50
Relaying rails, nominal	.....	25.00 to 26.00
Steel car axles	.....	17.00 to 18.00
Iron car axles	.....	25.00 to 26.00
No. 1 railroad wrought	.....	14.00 to 14.50
Forge fire	.....	9.75 to 10.25
No. 1 yard wrought, long	.....	13.00 to 13.50
Cast borings (clean)	.....	10.25 to 10.75
Machine-shop turnings	.....	9.75 to 10.75
Mixed borings and turnings	.....	10.25 to 10.75
Iron and steel pipe (1 in. diam., not under 2 ft. long)	.....	9.75 to 10.25
Stove plate	.....	11.00 to 12.00
Locomotive grate bars	.....	12.00 to 12.50
Malleable cast (railroad)	.....	14.00 to 15.00
Cast iron car wheels	.....	16.00 to 16.50

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast	.....	\$17.00 to \$17.50
No. 1 heavy cast (columns, building materials, etc.), cupola size	.....	16.00 to 16.50
No. 1 heavy cast, not cupola size	.....	12.00 to 12.50
No. 2 cast (radiators, cast boilers, etc.)	.....	14.00 to 14.50

Orders received by the General Electric Co. for the three months ended March 31 total \$73,487,903. This is a decrease of 8 per cent from the first quarter of 1923, when orders totaled \$80,010,045.



## Boston

### Steel Companies Credited with Making Low Prices on Pig Iron in New England

BOSTON, April 15.—Eastern Pennsylvania steel companies are credited with quoting low prices on pig iron in this territory, in competition with not only domestic but foreign iron as well. A New Hampshire machinery builder, in the market for 100 tons each of three grades, was quoted \$25 delivered on No. 2X eastern Pennsylvania iron or \$21.35 furnace which, if allowance is made for differentials, means \$20.85 furnace base. The firm is offered eastern Pennsylvania malleable at \$25 delivered, and silicon 3.25 to 3.75 at \$26.41 delivered or \$22.76 furnace. Buffalo, silicon 3.25 to 3.75, is offered at \$26.91 delivered or \$22 furnace. Steel companies are soliciting business from foundries at price concessions, but because of the lack of actual buying it is difficult to determine just what would be done by iron makers if real business should develop. It may be said, however, that \$22 Buffalo base is a purely nominal price, due to the frequency with which \$21.50 is quoted on No. 2 plain and No. 2X; also that \$23 eastern Pennsylvania furnace base is a nominal figure because of the willingness of certain furnaces to quote \$22. During the week ending April 12, 137 tons of Belgian iron was landed here. Foreign iron, Continental No. 2 plain and No. 1X, with regular foundry analysis, is offered at prices under domestic without takers.

We quote delivered prices on the basis of the latest reported sales as follows, having added \$3.65 freight from eastern Pennsylvania, \$4.91 from Buffalo, \$5.92 from Virginia and \$9.60 from Alabama:

East. Penn., sil. 2.25 to 2.75.....	\$26.15 to \$27.15
East. Penn., sil. 1.75 to 2.25.....	25.65 to 26.65
Buffalo, sil. 2.25 to 2.75.....	26.41 to 27.41
Buffalo, sil. 1.75 to 2.25.....	26.41 to 26.91
Virginia, sil. 2.25 to 2.75.....	32.42 to 33.42
Virginia, sil. 1.75 to 2.25.....	31.92 to 32.92
Alabama, sil. 2.25 to 2.75.....	33.10
Alabama, sil. 1.75 to 2.25.....	32.60

**Shapes and Plates**—Bids on the Statler Hotel, Boston project, involving several thousand tons of structural steel, have been put over until April 24. The General Electric Co., Pittsfield, Mass., presumably will close this week on 700 tons for a plant addition. There appears to be some slowing up in building projects requiring round tonnages of steel. The market for plates continues unsettled, with 2.20c. f.o.b. Pittsburgh, the most commonly quoted price. The market for shapes generally is 2.25c.

Soft steel bars, \$3.51½ per 100 lb. base; flats, \$4.40; plain and deformed concrete bars, \$3.76½; small angles, channels and tees, \$3.51½; structural steel, large angles and beams, \$3.61½; tire steel, \$4.80 to \$5.15; open-hearth spring steel, \$5 to \$8; crucible spring steel, \$12; steel bands, \$4.31½ to \$5.20; hoop steel, \$5.80 to \$6.30; cold rolled steel, \$4.35 to \$4.85; toe calk steel, \$6.15; heavy plates, \$3.61½; light plates, \$3.86½; diamond pattern plates, stock sizes, \$5.90; blue annealed sheets, \$4.51½; refined iron bars, \$3.51½; best refined iron bars, \$4.75; Wayne, \$5.50; Norway rounds, \$6.60; Norway squares and flats, \$7.10.

**Cast Iron Pipe**—Inquiries continue numerous, but most of them are for small tonnages. Several New England cities as well as towns are still uncovered for 1924, consequently the outlook for further activity is bright. Foundries are well sold up on small sizes of pipe and are generally maintaining full prices. On 16-in. pipe and larger, however, concessions running as high as \$1 a ton have been made. The Warren Foundry & Pipe Co. is awarded 2000 tons, 8-, 12- and 16-in. high pressure pipe by Boston and Brookline, Mass., 1924 requirements on 10- and 12-in. stock. Claremont, N. H., awarded 100 tons 10-in. pipe to the United States Cast Iron Pipe Co. Saugus, Mass., is in the market for 100 tons 4-, 6-, 8- and 10-in. pipe, and Lawrence, Mass., for 12-in. pipe requirements. Prices follow: 4-in. pipe, \$69.10 f.o.b. Boston common freight rate points; 6- to 12-in., \$64.10; 16-in. and larger, \$63.10.

**Coke**—The New England Coal & Coke Co. and the Providence Gas Co. have announced a reduction of 50c. a ton in the price of by-product foundry coke, to \$12 a ton delivered in New England, to apply to April specifications against first half contracts. For points outside New England, the price remains \$9 ovens. The cut in prices is due in part to concessions named by

Connellsville foundry coke makers in this district and to a falling off in New England foundry coke requirements. April started with rather free contract specifications, but within the past week requests for fuel from New England foundries have dropped abruptly. Shipments of New England make coke to points outside continue liberal, however.

**Old Material**—Inactivity in the old material market is even more pronounced than heretofore. Where dealers were buying and selling round tonnages, they are now operating in car lots and mighty few of these. Yard stocks are comparatively small, and quantities in first hands also are limited due to the business depression in most metal working shops and in other lines of industry. Those first hands having material are not anxious to sell at prevailing quotations. In the meantime, old material values continue to soften under their own weight. Not in months was so little heavy melting steel purchased as during the past week. During the early part of the week, shafting at \$16.50 on cars shipping point figured in the limited transactions, but the best dealers will do today is \$16. Steel rails to apply to a small heavy melting steel contract were purchased at \$10.50 a ton on cars, 50c. to 75c. under the heavy melting steel market. Machine shop turnings and mixed borings and turnings remain the most active spots in the list. The top price reported on mixed stock is \$9.10 on cars, with the average \$9 or just under. Not more than \$9 was paid for steel turnings.

The following prices are for gross ton lots delivered consuming points:

No. 1 machinery cast.....	\$21.50 to \$22.00
No. 2 machinery cast.....	18.00 to 18.50
Stove plates.....	15.00 to 15.50
Railroad malleable.....	18.00 to 19.00

The following prices are offered per gross ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel.....	\$11.00 to \$11.25
No. 1 railroad wrought.....	12.00 to 12.50
No. 1 yard wrought.....	11.00 to 11.50
Wrought pipe (1-in. in diam. over 2 ft. long).....	9.50 to 10.00
Machine shop turnings.....	8.50 to 9.00
Cast iron borings, chemical.....	10.50 to 11.00
Cast iron borings, rolling mill.....	8.50 to 9.00
Blast furnace borings and turnings.....	8.50 to 9.00
Forged scrap and bundled skeleton.....	9.00 to 9.50
Shafting.....	15.00 to 16.00
Street car axles.....	15.00 to 16.00
Rails for rolling.....	12.50 to 13.00

## Buffalo

### Some Improvement in Finished Materials—Pig Iron Very Dull

BUFFALO, April 15.—Most melters seem to have covered their second quarter pig iron requirements and inquiry for the third quarter is not brisk. Producers do not look upon the inactive period as a buyers' strike and believe there is considerable pent-up tonnage. In the 5000 to 6000 tons of aggregate inquiry for the week was a 2000-ton lot of foundry from the West and outside the territory which is not expected to come to Buffalo. The American Hardware Corporation, New Britain, Conn., is inquiring for 500 to 1000 tons, and a New York State melter seeks 500 tons of foundry. The Worthington Pump Corporation inquiry for 1750 tons has not been placed, while the New York Air-brake inquiry for 1500 tons of high silicon foundry, also previously noted, is thought to have been placed with a furnace at present inactive, but having considerable piled iron. One furnace which has considerable iron in stock was able to apply orders for approximately 1200 tons of 4.25 to 4.50 silicon iron against this lot. Total sales are believed to have been approximately 4000 tons. Some sales of higher silicon iron have been made on a \$21 base and it is probable that most any amount of iron can be placed at \$21 to \$21.50. The \$22 has almost entirely disappeared.

We quote f.o.b., gross ton, Buffalo, as follows:

No. 1 foundry, sil. 2.75 to 3.25.....	\$22.00 to \$22.50
No. 2 foundry, sil. 2.25 to 2.75.....	21.50 to 22.00
No. 2 plain, sil. 1.75 to 2.25.....	21.00 to 21.50
Basic.....	21.50 to 22.00
Malleable.....	21.50 to 22.00
Lake Superior charcoal.....	29.25

**Finished Iron and Steel.**—The situation looks a little brighter this week for the mills, which report a considerable increase in the amount of bar business placed, one having taken several sizable orders. The buying heretofore has been of the day-by-day variety, but prospects are that backlogs may be strengthened soon. On small lots of bars, 2.40c. has been paid, but on sizable lots, 2.30c. has been done, though no slipping from this latter figure is noted. Sellers believe the market is on the upgrade and that 30 days will see a brisk market. This pick-up in business contrasts with the idea of some purchasers that steel prices will be reduced, which seems to be the main reason for their holding off buying. The plate market is better. It is reported that the American Car & Foundry Co. placed a sizable order for plates and shapes with a district mill, but this report is unverified. Other plate business has shown an improvement and one local maker states that he has been able to obtain 2.40c. on prompt shipment plates and believes that most of the very low plate prices are associated with unacceptable deliveries. Bids have closed on the 3850 tons for the Liberty Bank Building. It is reported that Gill & Sons of Cleveland are low, with the Cowper Co. of Buffalo next. The Dunkirk High School job of 400 to 500 tons is still unplaced. Road material placement has been active. Concrete Steel Co. will fabricate 800 tons for Erie county and along with this is 20,000 yards of mesh. Truscon Steel Co. has the contract for 200 tons for Hornell roads and 200 tons for Rochester roads. The price ranges between 2.55c. and 2.65c. on reinforcing bars from stock. Quietness in the automobile trade has dulled demand for alloy steel. Pipe is very strong and the Bethlehem rail mill at Lackawanna has some orders ahead. Operation remains about as before, except that one mill has decreased its open-hearth operation to about 70 per cent.

We quote warehouse prices, Buffalo, as follows:

Structural shapes, 3.65c.; plates, 3.65c.; soft steel bars, 3.55c.; hoops, 4.65c.; bands, 4.35c.; blue annealed sheets, No. 10 gage, 4.30c.; galvanized steel sheets, No. 28 gage, 6.10c.; black sheets, No. 28 gage, 5c.; cold rolled round shafting, 4.45c.

**Warehouse Material.**—The market is just a little quieter than the previous week. A good run of business was experienced during March, and April started out well, but has not maintained the same gait, though prospects are for brisker business later in the month. Orders are keeping up in number, but the individual lots are not so large.

**Old Material.**—Buying is almost completely at a standstill. Open-hearth operation has been further curtailed and though stocks in mill yards are thought to be low, it is probable that until a buying movement occurs for mill products the results of hand-to-mouth buying of scrap will suffice them. Dealers believe that any semblance of a buying movement in steel will start the market on its upward trend, but just now even dealers show passive interest and are, as usual, waiting for an upward trend, before purchasing to fill their yards. Canadian dealers have continued their interest in the market for No. 1 machinery cast and some local selling has been done in this commodity as well as in malleable. For No. 1 cast \$18.25 to \$19 has been paid, and for malleable, \$19 to \$19.50. A mill which had suspended shipments on heavy melting steel and hydraulic compressed sheets is accepting only what it cannot avoid. Dealers supplying foundries with scrap material have noticed a very heavy dropping off in foundry buying for the past month.

We quote f.o.b., gross ton, Buffalo, as follows:

Heavy melting steel.....	\$16.50 to \$17.00
Low phos., 0.04 and under.....	20.00 to 21.00
No. 1 railroad wrought.....	14.50 to 15.00
Car wheels .....	18.00 to 18.50
Machine shop turnings.....	11.50 to 12.00
Cast iron borings.....	12.50 to 13.00
No. 1 busheling.....	15.00 to 15.50
Stove plate .....	16.00 to 16.50
Grate bars .....	16.00 to 16.50
Bundled sheet stampings.....	10.00 to 11.00
Hydraulic compressed .....	15.00 to 15.50
Railroad malleable .....	19.00 to 19.50
No. 1 machinery cast.....	18.25 to 19.00

"Industrial Mobilization" was the subject of Dwight F. Davis, Assistant Secretary of War, at a meeting of the Associated Engineering Societies of Pittsburgh at the William Penn Hotel, Pittsburgh, April 15.

## Cincinnati

### Price of Basic Declines—Resale Foundry for Sale at \$22

CINCINNATI, April 15.—Sales of pig iron are widely scattered and in small volume. A nearby melter bought 400 tons of foundry grades at \$23 base, Ironton, and we note a sale of 500 tons of Northern basic at \$21.50, Ironton, which establishes the basic market at that figure. There is little interest being shown in Bessemer, silvery or charcoal irons, and only occasional sales of Southern iron are negotiated. Prices on Southern irons are unchanged at \$22.50 for Tennessee irons and \$23 for Alabama brands. It is reported that these prices could be shaded on attractive tonnages and some resale iron is available at \$22, Birmingham. Some foundries catering to the automobile industry have asked furnaces to hold up shipments for the time being, but other interests are taking all iron on contracts, and some stove companies have asked to anticipate shipments.

Based on freight rates of \$4.05 from Birmingham and \$2.27 from Ironton we quote f.o.b. Cincinnati:

Southern coke, sil. 1.75 to 2.25 (base)....	\$26.55
Southern coke, sil. 2.25 to 2.75 (No. 2 soft) ..	27.05
Ohio silvery, 8 per cent.....	35.77
Southern Ohio coke, sil. 1.75 to 2.25 (No. 2) ..	25.27
Basic Northern .....	23.77
Malleable .....	25.27

**Reinforcing Bars.**—Demand continues steady, though most of the jobs call for less than 100 tons. The Pollak Steel Co. has taken the bars for the memorial stadium at the University of Cincinnati, and also for the addition to the Times-Star building at Cincinnati. Bourne-Fuller Co. has taken 100 tons for an unnamed project in Cincinnati. Max Penker & Sons have been awarded general contracts for the erection of an addition to the Miami Valley Hospital, Dayton, 150 tons, and for the St. Theresa's Home for the Aged, Cincinnati, 200 tons. Prices continue the range of last week, 2.10c. to 2.30c. being the spread on rail steel bars, with 2.30c. to 2.40c. being quoted on bars rolled from new billets.

**Structural Activity.**—Inquiries are scarce and mostly for small tonnages. Several awards will be made within the next two weeks involving fair-sized tonnages. Plain material prices range from 2.30c. to 2.35c., though figures on some of the projects awarded recently would indicate a lower price, it being reported that several jobs have been taken at less than \$100 per ton erected.

**Sheets.**—While there has been a slowing down in placing of orders, fill-in tonnages are in fair volume. There is little change in the price situation from last week, blue annealed sheets being quoted at 2.85c. to 3c., black sheets at 3.70c. to 3.85c., and galvanized sheets at 4.75c. to 5c.

**Warehouse Business.**—Local jobbers report a steady flow of small orders, with a fair aggregate tonnage. Buying is generally for each individual project. Wire products are moving a little better. Prices are being held firmly, no changes being reported over last week.

Cincinnati jobbers quote: Iron and steel bars, 3.50c.; reinforcing bars, 3.60c.; hoops, 4.55c.; bands, 4.25c.; shapes, 3.60c.; plates, 3.60c.; cold-rolled rounds, 4.25c.; cold-rolled flats, squares and hexagons, 4.25c.; open-hearth spring steel, 5c. to 6c.; No. 10 blue annealed sheets, 4.10c.; No. 28 black sheets, 4.80c.; No. 28 galvanized sheets, 5.85c.; No. 9 annealed wire, \$3.60; common wire nails, \$3.50 per keg base; cement coated nails, \$3 per keg.

**Finished Materials.**—Demand continues of the hand-to-mouth variety for finished materials, but the total tonnage booked is showing a slight increase each week. Stocks are light, and a steady flow of small orders is looked for in the trade. The principal inquiry in the market is for 900 tons of plates for the L. & N. Railroad, on which bids will close this week. Competition for this business is expected to be very keen. On current orders, 2.30c. to 2.40c. is the market on bars, shapes and plates, though a few of the larger companies are quoting 2.40c. to 2.50c. and booking small orders. There is little change noted in the demand for wire products, and orders are still scarce, though prices are fairly



steady. Bolt and nut manufacturers in the district report a let-up in the demand from the automotive industry, but little slowing down of the demand from other fields. Forgings are in fair demand, and manufacturers of steel castings report no change in operations.

**Fluorspar.**—We note a sale of 200 tons of fluorspar, guaranteed 85 and 5, at \$23.50, mines. It is still possible, however, to secure fluorspar from some of the smaller producers at \$1 to \$2 per ton under the prices quoted by the larger producers. The extremely low prices lately quoted have apparently been withdrawn. Prices are given on page 1189.

**Coke.**—A little more activity is reported in the coke market, but sales are still comparatively limited. It is now possible to get New River foundry coke at \$10, ovens, this being a reduction of 50c. Some ovens in Wise County have been put out. Furnace and domestic grades are very dull.

Connellsville furnace, \$3.75; foundry, \$4.75; New River foundry, \$10; Wise County furnace, \$4; foundry, \$5; by-product foundry, \$8, Connellsville basis.

**Old Material.**—With the exception of a sale of approximately 1000 tons of railroad cast, the scrap market has been inactive. Occasional orders for carloads have been booked. Prices continue to decline, and railroad offerings, totaling nearly 100,000 tons, are expected to further depress the market.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

Per Gross Ton	
Heavy melting steel.....	\$12.50 to \$13.00
Scrap rails for melting.....	12.00 to 12.50
Short rails.....	17.00 to 17.50
Relaying rails.....	28.00 to 28.50
Rails for rolling.....	14.00 to 14.50
Old car wheels.....	12.50 to 13.00
No. 1 locomotive tires.....	13.50 to 14.00
Railroad malleable.....	15.00 to 15.50
Agricultural malleable.....	14.00 to 14.50
Loose sheet clippings.....	8.00 to 8.50
Champion bundled sheets.....	10.00 to 10.50

Per Net Ton	
Cast iron borings.....	8.50 to 9.00
Machine shop turnings.....	7.50 to 8.00
No. 1 machinery cast.....	17.50 to 18.00
No. 1 railroad cast.....	14.00 to 14.50
Iron axles.....	20.50 to 21.00
No. 1 railroad wrought.....	10.00 to 10.50
Pipes and flues.....	7.00 to 7.50
No. 1 busheling.....	8.50 to 9.00
Mixed busheling.....	6.00 to 7.00
Burnt cast.....	10.00 to 10.50
Stove plate.....	10.00 to 10.50
Brake shoes.....	11.00 to 11.50

## Birmingham

### Four Iron Companies Reduce Wages—Pig Iron Market Dull

**BIRMINGHAM, ALA., April 15.**—Four iron making companies in Alabama have readjusted wages of some or all of their employees. The reductions ranged from 10 and 12½ per cent to 15 per cent.

**Pig Iron.**—No improvement is to be reported in Southern pig iron for the week. The sales are in small lots, ranging from a car to 100 tons, and they are not numerous. The entire business for the week is very much under the make. The quotations remain firm, furnace interests not seeking business by making concessions and \$23 to \$23.50 per ton, No. 2 foundry, 1.75 to 2.25 per cent silicon, are stated as the base. Freight differentials from Tennessee furnaces and from furnaces on the Tennessee River in Alabama may bring about a little lower prices in certain sections. The delivery is very steady and a survey again shows that there is some iron leaving the surplus stock piles on furnace yards.

We quote per gross ton f.o.b. Birmingham district furnace as follows:

No. 1 foundry, 2.25 to 2.75 sil....	\$23.50 to \$24.00
No. 2 foundry, 1.75 to 2.25 sil....	22.50 to 23.50
Basic.....	22.50 to 23.00
Charcoal, warm blast.....	32.00 to 33.00

**Cast Iron Pipe.**—All of the cast iron pressure pipe makers in Alabama, three companies with five plants in this State and one at Chattanooga, are receiving let-

tings almost every day and announce many specifications in sight. The request to make effort to ship quantities of pipe this month to stave off the advance of 60c. in the rail and water freight rate through Mobile and New Orleans has not availed much and the belief is that not a very great tonnage will have been moved. No change in quotations is intimated. The United States Cast Iron Pipe & Foundry Co. has looked for extraordinary lettings from Chicago. The American Cast Iron Pipe Co. has orders from Santa Anna, Cal., for 187 tons; Rochester, Minn., 334 tons; Wolfe City, Texas, 135 tons; Fostoria, Ohio, 135 tons. Soil pipe plants are looking forward to an early recovery, the lull between seasons to be ended as building projects loom up in all parts of the South. In Birmingham alone several large building projects are announced for this year, including a church to cost upward of \$450,000; a hotel to cost around \$1,000,000; a parochial school to cost \$150,000; an athletic club to cost around \$750,000; and an office building to cost around \$250,000.

We quote class B, 4-in. water, \$52 to \$53; 6-in. and over, \$48 to \$49; class A, \$5 higher; standard soil pipe, \$60; heavy gage, \$45; standard fittings, \$110.

**Coal and Coke.**—Coal operators in Alabama are expecting increased demand by reason of shut down of operations at mines in Kansas, Missouri, Arkansas and other States in that section as well as strike trouble and shut downs in Kentucky, Indiana and Illinois. Labor is satisfied in this State and the output of the coal mines here could be increased from 50,000 to 75,000 tons a week at least. In the meantime there is development under way and will show decidedly improved conditions within a few months. Furnace coke is quoted \$5 to \$5.50 and foundry \$5.50 to \$6.50.

**Old Material.**—While the Birmingham scrap iron and steel market is still lagging, the dealers are manifesting confidence and believe there will be improvement ere long. The little old material moving is on old contracts. Heavy melting steel is listless, the Gulf States Steel Co. operating but three out of six open-hearth furnaces and apparently has considerable supply of steel on hand. The Tennessee Coal, Iron & Railroad Co. is not in the open market on this product. No. 1 cast and stove plate will be noted moving from yards of old material dealers for some time, a little at the time being accepted by the consumers on contracts placed two months ago.

We quote per gross ton f.o.b. Birmingham district yards as follows:

Cast iron borings, chemical.....	\$15.00 to \$16.00
Heavy melting steel.....	14.00 to 14.50
Railroad wrought.....	12.00 to 13.00
Steel axles.....	19.00 to 20.00
Iron axles.....	21.00 to 21.50
Steel rails.....	12.00 to 13.00
No. 1 cast.....	20.00 to 20.50
Tram car wheels.....	17.00 to 18.00
Car wheels.....	16.00 to 17.00
Stove plate.....	15.50 to 16.50
Machine shop turnings.....	7.00 to 9.00
Cast iron borings.....	9.00 to 10.00
Rails for rolling.....	16.50 to 17.00

### Youngstown Scrap Market

**YOUNGSTOWN, April 15.**—Scrap interests in the Mahoning Valley are "sitting tight," while melters are placing very little business on account of the reduced rate of open-hearth operations. The principal middle interest in this district characterizes the market as very quiet. Heavy melting steel is quotable at \$16 to \$16.50, which compares with a peak rate early this year of \$24 in the Mahoning Valley.

Buying is being done on a very moderate scale. Dealers are inclined to believe that the bottom of the current market decline has been reached or is at hand. In other forms of scrap besides heavy melting steel, current business involves only small-lot tonnages.

"Lake Superior Iron Ores" is the title of a small book issued by Clement K. Quinn & Co., Alworth Building, Duluth, Minn., giving analyses for 1924 of Bessemer, non-Bessemer, manganiferous, silicious and other ores. It contains 52 pages, attractively made up, with some illustrations.

## Cleveland

### Keen Competition in Pig Iron and Finished Material, with Buying Light

CLEVELAND, April 15.—The volume of business in finished materials continues light and competition has become keener. As a result, prices have further weakened. While minimum prices as a rule are no lower than a week ago, quotations that recently were exceptional are now fairly common. On steel bars, plates and structural material 2.30c. is the common quotation for fair-sized lots, although some business is taken at 2.40c. Plates are the weakest of the three products and on these 2.25c. has appeared. There is a disposition among some producers to resist the pressure of buyers for prices lower than 2.30c. However, many consumers feel that the market has not touched bottom and are deferring the placing of orders in the belief that they will secure still further concessions by waiting. In the meantime, stocks are being further depleted and considerable tonnage is backing up. Outside of the automotive industry there has been practically no suspensions of shipments. Foreign steel has appeared in Cleveland in the sale of a small lot of Belgian structural material to a local fabricator at the delivered price of about 2.20c. Hot-rolled strip steel prices are weak, with a range of from 2.60c. to 2.65c. for wide material and 2.75c. to 2.90c. for narrow strips and bands. Hoops are firm at 2.90c. to 3c. The Chesapeake & Ohio Railroad has an inquiry out for 100 locomotives requiring approximately 4000 tons of steel. The Channel Steel Barge Co. has an inquiry out for a small boat requiring 800 tons of steel. Other lake boat building projects are not active. The most conspicuous award in the building field during the week was 4000 tons for the Liberty Bank Building, Buffalo.

Jobbers quote steel bars, 3.36c.; plates and structural shapes, 3.46c.; No. 28 black sheets, 4.40c. to 4.65c.; No. 28 galvanized sheets, 5.60c. to 5.75c.; No. 10 blue annealed sheets, 3.60c. to 4c.; cold rolled rounds, 3.90c.; flats, squares and hexagons, 4.40c.; hoops and bands, 1 in. and wider and 20 gage or heavier, 4.16c.; narrower than 1 in. or lighter than No. 20 gage, 4.66c.; No. 9 annealed wire, \$3.50 per 100 lb.; No. 9 galvanized wire, \$3.95 per 100 lb.; common wire nails, \$3.60 base per 100 lb.

**Iron Ore.**—The naming of Lake Superior ore prices has so far brought out only a very limited amount of business. While a few sales were made during the week, the present dull condition of the pig iron and steel market does not offer encouragement to merchant furnaces to buy ore and the market is expected to drag along for some time. It has developed that the ore purchase by the Ford Motor Co. reported last week was divided between two producers, Clement K. Quinn & Co. taking 180,000 tons and John A. Savage & Co., 65,000 tons. The Ford Motor Co. insisted on having a clause in the contracts giving it the advantage of any reduction in rail or vessel rates during the season and at the same time adding to the cost any advance that might be made over last season's transportation rates. As it seems probable that vessel rates on ore will be reduced around 10c. a ton, this clause is of advantage to the Ford company. Several sellers declined to make contracts on this basis and got none of the Ford business. Considerable difference of opinion is being expressed by consumers over the 80c. a ton reduction in ore prices. Some feel that even a larger cut should have been made and others hold that the reduction should have been less than 80c. While a few consumers want early cargoes, furnace plants as a rule have good stocks and there is no disposition to hurry the opening of the season of navigation. A few cargoes may be shipped this month, but the movement during the early part of the season is expected to be light. It was estimated a few weeks ago that the 1924 ore movement would be 60,000,000 tons or about the same as last year, but with the slowing down in the iron and steel industry, a lighter movement than last year is now looked for.

**Pig Iron.**—The market continues to drag with sales generally limited to very small lots. There have been suspensions of large tonnages by automobile foundries, particularly in the Michigan territory, but foundries

not doing automobile work have not curtailed production and the new demand is entirely from foundries outside of the automobile field. The Ford Motor Co. is still operating at not much below its recent maximum schedule and an Ohio sheet mill that furnished the Ford company with a large tonnage of sheets and is a heavy buyer of basic pig iron has not curtailed its pig iron shipments. Competition is keen and while the market is weak, there is not sufficient business to test prices. For Cleveland delivery, local furnaces still hold to \$24 at furnace for foundry iron and made a few sales at that price during the week, although this is well above the delivered price of Buffalo and Valley iron in Cleveland. Little business came out in the immediate territory during the week and while local furnaces are holding nominally to \$23 for outside shipment, they will meet the Valley price situation when business develops. In the Valley district the foundry iron is now more commonly quoted at \$22 with \$22.50 as a maximum and there is evidence that the \$22 price might be shaded for shipment to points having lower freight rates from other furnaces. One lake furnace during the week sold 2000 tons of foundry iron, including a 500-ton lot to an eastern Indiana melter. A Valley furnace competed for this business, but had a disadvantage in freight rate. Another producer sold 1000 tons in lots of 200 tons and under. Steel making iron is inactive.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a \$3.02 freight rate from Jackson and \$6 rate from Birmingham:

Basic, Valley furnace .....	\$22.00
Northern No. 2 fdy., sil. 1.75 to 2.25 .....	24.50
Southern fdy., sil. 1.75 to 2.25 .....	29.00
Malleable .....	24.50
Ohio silvery, 8 per cent .....	35.52
Standard low phos., Valley furnace .....	29.00

**Sheets.**—While there is little new demand, no further suspensions are reported from automobile plants that recently curtailed production. At least two of the largest automobile companies making low priced cars are still operating at full capacity. Many mills have little business on their books and unless orders improve, further curtailment of mill schedules is expected. On black sheets 3.70c. has appeared, but 3.75c. is the common quotation and some independent mills have revised their contracts to that price. Blue annealed and galvanized sheets are unchanged at 2.90c. for the former and 4.90c. for the latter, although \$1 a ton concession from these prices can probably be obtained.

**Warehouse Business.**—The weakness in mill prices so far has had little effect on warehouse prices. While these are being shaded in some cases, they are as firm as they have been for several weeks.

**Reinforcing Bars.**—The market lacks strength. On new steel bars, 2.30c. is now the common quotation and a round lot is understood to have brought out a 2.25c. price. Rail steel bars are no longer firm at 2.10c. Warehouse prices are also weak at 2.60c. to 2.75c., Pittsburgh. A Toledo distributor has taken 250 tons for a building for the Libby Owens Sheet Glass Co., Toledo. Inquiry includes 150 tons for the City Hall, Akron, and 150 tons for a Masonic Temple in Canton.

**Semi-Finished Steel.**—Sheet bar prices finally have given way under the continued pressure of consumers and the market is no longer quotable above \$41. In some cases mills have revised \$42.50 contracts to a lower price. There is no new demand and some consumers who specialize on sheets for the automotive industry have suspended shipments. Some curtailment in production seems probable. Billets and slabs are still quoted at \$40, but prices on these are untested.

**Bolts, Nuts and Rivets.**—The bolt and nut market is dull and weak. The slump in the automobile industry has resulted in some suspensions. Prices are being shaded by some makers to 60, 10 and 5 per cent off list for machine bolts and an additional 5 per cent concession is reported on large bolts for railroads. The demand for rivets is slow and regular quotations are being shaded \$2 to \$3 a ton, although the local maker is adhering to the 2.75c. price.

**Coke.**—The demand for foundry coke is very light, as consumers are buying in small lots as needed. Prices on standard Connellsville foundry coke are \$4.75 to \$6.50.



**Old Material.**—The market continues inactive and weak. The downward price movement the past week was not so conspicuous as during the few previous weeks, but several grades were reduced, particularly heavy melting steel, which declined 25c. a ton, and borings and turnings, which were marked down 50c. Sales of heavy melting steel in small lots have been made to dealers at \$13.75. Local mills still have good stocks and are not buying scrap. Neither is there any demand in the Youngstown district. It is wholly a dealer's market with a great deal of scrap being offered and few dealers wanting to buy.

We quote dealers' prices f.o.b. Cleveland per gross ton:

Heavy melting steel.....	\$13.75 to \$14.25
Rails for rolling.....	15.25 to 15.75
Rails under 3 ft.....	16.00 to 16.25
Low phosphorus melting.....	16.50 to 17.00
Cast iron borings.....	10.75 to 11.00
Machine shop turnings.....	10.75 to 11.00
Mixed borings and short turnings.....	10.75 to 11.00
Compressed sheet steel.....	12.50 to 12.75
Railroad wrought.....	11.00 to 11.50
Railroad malleable.....	17.50 to 17.75
Light bundled sheet stampings.....	10.00 to 11.00
Steel axle turnings.....	11.50 to 12.00
No. 1 cast.....	19.00 to 19.50
No. 1 busheling.....	9.50 to 9.75
Drop forge flashings.....	9.50 to 9.75
Railroad grate bars.....	14.00 to 14.25
Stove plate.....	14.00 to 14.25
Pipes and flues.....	8.50 to 9.00

## St. Louis

### Pig Iron Market Extremely Dull, but Prices Have Not Changed

ST. LOUIS, April 15.—The market for pig iron continues extremely dull. Inquiries during the last week amounted to almost nothing, and there were no sales to speak of. However, prices are unchanged; at least openly, and until some business presents itself it cannot be known definitely what the market is. The furnace of the St. Louis Coke & Iron Co. at Granite City and the one on the west side of the river, both are making basic iron and will continue to do so for the remainder of this month. This is to fill an order taken some time ago for 10,000 tons of basic for an East Side melter for April delivery. The Granite City company has no iron on its yards, and it is stated that it will be 7000 tons short of making deliveries against contracts this month. Southern Ohio iron is being offered here on the basis of \$23.50 furnace, plus freight of \$4.79. Only a few lots where a special analysis is desired are being sold. An East Side melter is in the market for 100 tons of 12 to 13 per cent Bessemer ferrosilicon.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices \$2.16 freight from Chicago, \$3.28 from Birmingham (rail and water), \$5.17 from Birmingham, all rail, and 81 cents average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25...	\$26.16 to \$26.66
Northern malleable, sil. 1.75 to 2.25 .....	26.16 to 26.66
Basic .....	26.16 to 26.66
Southern fdy., sil. 1.75 to 2.25 (rail) .....	27.17 to 28.17
Southern foundry, sil. 1.75 to 2.25 (rail and water) .....	26.28 to 27.28
Granite City iron, sil. 1.75 to 2.25 .....	26.31 to 26.81

**Finished Iron and Steel.**—The contract for 500 tons of reinforcing bars for the Jewish Hospital probably will be let this week, as well as 150 tons for a business building at Joplin, Mo. There is virtually no activity in structural steel. Two railroad inquiries during the week combined would not make a fair-size warehouse order. There is little activity in other lines.

For stock out of warehouse we quote: Soft steel bars, 3.35c. per lb.; iron bars, 3.35c.; structural shapes, 3.45c.; tank plates, 3.45c.; No. 10 blue annealed sheets, 4.10c.; No. 28 black sheets, cold-rolled, one pass, 4.85c.; cold drawn rounds, shafting and screw stock, 4.70c.; structural rivets, 4.15c.; boiler rivets, 4.35c.; tank rivets, 7-in. and smaller, 50-5 per cent off list; machine bolts, 45-5 per cent; carriage bolts, 40-5 per cent; lag screws, 50-5 per cent; hot pressed nuts, squares or hexagons blank, \$2.50, and tapped, \$2.50 off list.

**Coke.**—A few inquiries for foundry coke for second quarter delivery have been received. Terre Haute by-product producers are selling on the basis of \$10.50, f.o.b. ovens. The Connellsville market is at about \$5.50 to \$6.50, according to the grade. Domestic coke is dull.

**Old Material.**—Outside of machinery cast and a few specialties in rolling mill grades, there is no buying by consumers in the St. Louis industrial district. Dealers are buying only spot cars to fill unexpired contracts. Railroad lists continue heavy, and there is a belief in some quarters that a few of the lines are holding back on actual sales, hoping for an advance in the market. New lists follow: Kansas City Southern, 1000 tons; Missouri-Kansas-Texas, 3400 tons; Illinois Central, 6000 tons; Wabash, 3900 tons; Texas & Pacific, 250 tons; Northern Pacific, 1800 tons; Norfolk & Western, 6000 tons; Louisville & Nashville, 3100 tons.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton	
Iron rails .....	\$15.00 to \$15.50
Rails for rolling.....	16.25 to 16.75
Steel rails less than 3 ft.....	18.00 to 18.50
Relaying rails, 60 lb. and under.....	25.00 to 26.00
Relaying rails, 70 lb. and over.....	32.50 to 33.50
Cast iron car wheels.....	16.50 to 17.00
Heavy melting steel.....	15.00 to 15.50
Heavy shoveling steel.....	15.00 to 15.50
Frogs, switches and guards cut apart .....	16.00 to 16.50
Railroad springs .....	18.00 to 18.50
Heavy axles and tire turnings.....	12.00 to 12.50
No. 1 locomotive tires.....	15.75 to 16.25
Per Net Ton	
Steel angle bars .....	15.50 to 16.00
Steel car axles .....	18.00 to 18.50
Iron car axles .....	27.00 to 27.50
Wrought iron bars and transoms .....	19.00 to 19.50
No. 1 railroad wrought.....	12.50 to 13.00
No. 2 railroad wrought.....	13.50 to 14.00
Cast iron borings .....	10.00 to 10.50
No. 1 busheling .....	13.00 to 13.50
No. 1 railroad cast.....	18.50 to 19.00
No. 1 machinery cast .....	19.00 to 19.50
Railroad malleable .....	16.00 to 16.50
Machine shop turnings.....	8.00 to 8.50
Champion bundled sheets .....	8.50 to 9.00

## Philadelphia

### New Business Is Very Light, All Products Being More or Less Affected

PHILADELPHIA, April 14.—In a mass of conflicting statements as to prices being quoted on steel products, it is difficult to sift out the reliable from the unreliable, but it is apparent that with the exception of pipe, tin plate and possibly some of the wire products, all of the finished steel products are decidedly weaker. Incidentally the weaker condition of most steel products has quieted talk of an advance on tin plate for third quarter. Plates continue the weakest, with 2.20c., Pittsburgh, easily obtainable from several mills on lots of a carload or more. This price has not been tested this week on any large tonnages. Structural shapes are more frequently quoted at 2.25c., Pittsburgh, with 2.30c. on small lots. Bars are 2.25c. to 2.30c., Pittsburgh. In sheets there is more marked weakness. Galvanized are obtainable at 4.85c. to 4.90c., black sheets at 3.65c. to 3.75c. and blue annealed at 2.85c. and 2.90c., Pittsburgh. In hot- and cold-rolled strips there is also weakness. Hot-rolled, wider than 3 in., have been sold in competition with plate-mill product at liberal concessions, and on the narrow widths 2.75c., Pittsburgh, has been shaded on desirable business. Cold-rolled strips are quoted from 4.50c. to 4.75c., Pittsburgh, the tendency of mills being to offer concessions for immediate specifications.

Raw material prices are also exceedingly weak. Pig iron demand consists chiefly of carload lots, and there is no real test of that market. Scrap continues to decline.

**Pig Iron.**—An inquiry for 1000 tons of basic and malleable iron is the only item of interest in an exceedingly dull market. Some sellers report the smallest volume of business in years in the past week. Sales are almost entirely of carload lots, and even these are not plentiful. In such a condition prices have received no real test. Sellers, themselves, do not know what they might be tempted to quote on an attractive tonnage. Nominally the foundry market remains at \$22 to \$22.50,

furnace, for No. 2 plain, with 50c. differentials for the higher silicon grades. From the viewpoint of those furnaces which intend to remain in operation, the only cheerful note in the situation is the probable reduction in output during the next 30 days in this district. One Warwick furnace has been blown out, leaving one active; the Replogle furnace at Wharton, N. J., has stopped its fuel supply, and will go out almost any day; Witherbee, Sherman & Co. have put out a furnace at Port Henry, N. Y., the only one that was active; Temple is out; Colonial will probably go out soon and the Bethlehem Steel Co. is reported to have put out three furnaces, one at Buffalo, one at Sparrows Point and one at Steelton. Even with a reduction in the current production there are ample stocks on furnace banks to take care of normal demand for the remainder of this quarter. Pig iron imports last week were 1000 tons from England and 1195 tons from France.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76 cents to \$1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	\$22.76 to \$23.63
East. Pa. No. 2X, 2.25 to 2.75 sil.	23.26 to 24.13
East. Pa. No. 1X.	23.76 to 24.63
Virginia No. 2 plain, 1.75 to 2.25 sil.	30.17 to 31.17
Virginia No. 2X, 2.25 to 2.75 sil.	30.67 to 31.67
Basic delivery eastern Pa.	21.50 to 22.50
Gray forge	22.00 to 23.00
Malleable	23.00 to 24.00
Standard low phos. (f.o.b. furnace)	26.00 to 27.00
Copper bearing low phos. (f.o.b. furnace)	26.00 to 27.00

**Ferroalloys.**—There is practically no demand for ferromanganese. Domestic and foreign prices remain at \$107.50, furnace or seaboard.

**Billets.**—Semi-finished steel is not strong. Prices quoted on rerolling billets range from \$38 to \$40, Pittsburgh, and on forging billets, \$42 to \$45.

**Plates.**—It has been stated to Eastern steel companies that the Chesapeake & Ohio Railroad will contract for freight cars with car builders, the latter to furnish the material. This road took bids recently on 37,500 tons of plates, shapes and bars in an effort to buy the material on its own account for the car builders. Most of the steel will probably be furnished by mills in the Pittsburgh district. Eastern plate mills are operating at about the same schedule as in recent weeks, but orders are coming in more slowly and in very small lots. Prices are weak, but not materially changed from last week. Several mills are quoting 2.20c., Pittsburgh, on lots of a carload or more, with 2.25c. or 2.30c. being obtained on less than carloads. The Chesapeake & Ohio Railroad is inquiring for 100 locomotives and the Pennsylvania Railroad has authorized the building of 50 suburban locomotives in its own shop at Altoona, Pa. This road will also build 12 all-steel dining cars.

**Structural Material.**—The principal structural inquiry here is for 2000 tons for the Maddock Pottery Co., Trenton, N. J. The Philadelphia Rapid Transit Co. will build a car barn, requiring 700 tons of steel. A building for the General Electric Co., Philadelphia, will take about 500 tons. Shapes are quoted at 2.25c. to 2.30c., Pittsburgh, with 2.35c. sometimes quoted on small lots. New orders are declining, being less than mill shipments.

**Bars.**—Merchant steel bars are being sold at from 2.25c. to 2.30c., and demand is limited to small lots. The Pennsylvania Railroad has bought several hundred tons of rivet rods. Bar iron demand shows no improvement, but prices are unchanged at 2.20c. to 2.25c., Pittsburgh.

**Sheets.**—Sheet prices show further weakness. Galvanized sheets are obtainable at 4.85c. to 4.90c., black at 3.65c. to 3.75c. and blue annealed at 2.85c. to 2.90c., with some sales at 3c. The volume of business is considerably lighter than that of last month.

**Ore.**—Imports of ore in the week ended April 12 were as follows: Iron ore, from Algeria, 10,758 tons; chrome ore, from Portuguese Africa, 3500 tons; manganese ore, from Germany, 16 tons.

**Steel Imports.**—Imports of steel last week at this port were: 231 tons of blooms, 30 tons of beams, 151 tons of bars, all from Belgium; 198 tons of angles, from Luxemburg.

**Warehouse Business.**—The cautious buying policy of most consumers has resulted in a little freer purchasing out of stock, consequently jobbing business has shown a slight improvement. Prices are very irregular and concessions from the figures quoted below are often obtainable. These prices are for local delivery:

Soft steel bars and small shapes, 3.47c.; iron bars (except bands), 3.47c.; round edge iron, 3.75c.; round edge steel, iron finished, 1½ x ¼ in., 3.50c.; round edge steel planished, 4.30c.; tank steel plates, ¼ in. and heavier, 3.75c.; tank steel plates, ½ in., 3.82c.; blue annealed steel sheets, No. 10 gage, 4.10c.; black sheets, No. 28 gage, 5.15c.; galvanized sheets, No. 28 gage, 6.25c.; square twisted and deformed steel bars, 3.57c.; structural shapes, 3.57c.; diamond pattern plates, ¼-in., 5.40c.; ½-in., 5.60c.; spring steel, 5c.; round cold-rolled steel, 4.35c.; squares and hexagons, cold-rolled steel, 4.85c.; steel hoops, 1 in. and wider, No. 20 gage and heavier, 4.27c.; narrower than 1 in., all gages, 4.77c.; steel bands, No. 12 gage to ½-in., inclusive, 4.27c.; rails, 3.47c.; tool steel, 8.50c.; Norway iron, 7c.

**Old Material.**—An Eastern steel company has bought 12,000 tons of No. 1 heavy melting steel at \$15, delivered. Small lots have been sold to one or two other mills at \$15.50. The market is weak, several grades have declined 50c. a ton as compared with prices of a week ago. Yard dealers are beginning to accumulate stocks in their yards, believing that the end of the price decline is not far off.

We quote for delivery at consuming points in this district as follows:

No. 1 heavy melting steel	\$15.00 to \$15.50
Scrap rails	15.00 to 15.50
Steel rails for rolling	18.00 to 19.00
No. 1 low phos., heavy 0.04 and under	20.00 to 21.00
Couplers and knuckles	20.00 to 20.50
Cast-iron car wheels	17.50 to 18.00
Roller steel wheels	20.00 to 20.50
No. 1 railroad wrought	18.50 to 19.00
No. 1 yard wrought	17.00 to 17.50
No. 1 forge fire	13.50 to 14.00
Bundled sheets (for steel works)	13.50 to 14.00
Mixed borings and turnings (for blast furnace use)	13.00 to 13.50
Machine shop turnings (for steel works use)	13.50
Machine shop turnings (for rolling mill use)	13.50 to 14.00
Heavy axle turnings (or equivalent)	14.00 to 14.50
Cast borings (for steel works and rolling mills)	14.00 to 14.50
Cast borings (for chemical plants)	15.50 to 16.50
No. 1 cast	18.00 to 18.50
Heavy breakable cast (for steel plants)	15.50 to 16.00
Railroad grate bars	15.00 to 15.50
Stove plate (for steel plant use)	15.00 to 15.50
Railroad malleable	17.00 to 17.50
Wrought iron and soft steel pipes and tubes (new specifications)	14.00 to 15.00
Shafting	20.00 to 21.00
Steel axles	20.00 to 21.00

## Establishing Specifications for Iron and Steel Scrap

PITTSBURGH, April 15.—What may be regarded as the first step in the direction of the establishment of standard specifications for iron and steel scrap came at a conference held at the William Penn Hotel here this afternoon of the Iron and Steel Committee of the National Association of Purchasing Agents and representatives of the scrap iron and steel dealers. Tentative specifications as drafted by the committee of the Purchasing Agents' Association were presented and discussed and a number of changes, mostly of a minor character, were adopted. The amended specifications will be presented for tentative approval by the National Association of Purchasing Agents at the annual convention in Boston, May 19 to 23. Favorable action at that convention will be followed by the presentation of the specifications at the convention of the American Railway Association at Atlantic City, June 16 to 18.

## Another Furnace for St. Louis

The St. Louis Coke & Iron Co., Granite City, Ill., has blown out its blast furnace for relining and has also decided definitely upon erection of a second stack.

Jobbers in the Youngstown district have cut the price of plumbers' supplies 5 per cent.



## FABRICATED STEEL BUSINESS

### Week's Awards the Largest Total in Some Months —Numerous Fresh Projects

With awards exceeding 56,000 tons, the structural steel business settled in the past week makes the largest total for a like period so far this year. Included was nearly 6000 tons for school buildings in New York, 8000 tons for the Western Electric Co. and 16,300 tons for the New Palmer House in Chicago. New projects coming to light call for 33,000 tons, including 11,000 tons for oil tanks in Texas. The awards include the following:

Board of Education, New York, contracts let for six schools, as follows, with one in addition yet unsettled: Nos. 216 and 217, 2200 tons, to Taylor-Fichter Steel Construction Co.; No. 82, 920 tons, and No. 220, 1250 tons, reported let to Easton Structural Steel Co.; No. 83, 1000 tons, to George A. Just Co.; No. 97, 400 tons, to Communipaw Steel Co.

Western Electric Co., main buildings of new manufacturing plant at Kearny, N. J., 8000 tons, to McClintic-Marshall Co.

L. Bamberger & Co., Newark, museum building, 400 tons, to Bigelow & Nichols.

Franklin Simon & Co., New York, store addition, 100 tons, to Hay Foundry & Iron Works.

New York Edison Co., substation in New York, 100 tons, to Hay Foundry & Iron Works.

Merchants' Refrigerating Co., New York, 600 tons, to Levering & Garrigues Co.

Baltimore & Ohio, bridge work, 5200 tons, to Fort Pitt Bridge Works.

Edison Electric Illuminating Co., Cambridge Street station, 500 tons, to New England Structural Co.

Professional office building, East Fortieth Street, New York, 650 tons, to A. E. Norton, Inc.

Loft building, 14 stories, West Fortieth Street, 750 tons, to Paterson Bridge Co.

New Republic Bank Building, Dallas, Tex., 2019 tons, to Mosher Steel & Machinery Co.

Cast House at No. 2 Furnace for Youngstown Sheet & Tube Co. at Indiana Harbor, Ind., 546 tons, to Worden-Allen Co.

Jackson Park National Bank, Chicago, 235 tons, to Union Foundry Co.

Church, Broadway and Catalpa Street, Chicago, 218 tons, to unnamed fabricator.

New Palmer House, Chicago, 16,300 tons, to American Bridge Co.

Indiana Harbor Belt Railroad, 975 tons, to American Bridge Co.

Woodward-Wight Co., warehouse, New Orleans, 340 tons, to Lukens Steel Co.

Buffalo General Electric Co., substation, 175 tons, to Kellogg Structural Steel Co.

Columbia Paper Mills, Minnetonka, N. Y., 150 tons, to Kellogg Structural Steel Co.

Niagara Lockport & Ontario Power Co., substation and transmission material, 100 tons, to Bancroft-Jones Corporation.

The Liberty Bank Building, Buffalo, 4000 tons, to the American Bridge Co.

Harbor sheds, San Pedro, Cal., 4000 tons, to United States Steel Products Co.

Eastview Apartment Building, Chicago, 320 tons, to Duffin Iron Works.

Michigan Copper & Brass Co., buildings, Detroit, 350 tons, to Whitehead & Kales.

Libby-Owens Sheet Glass Co., Toledo, Ohio, 1300 tons, to the Massillon Bridge & Structural Co.

St. Mary's Seminary, Cleveland, 350 tons, to the Van Dorn Iron Works Co.

Twelfth Street bridge, Kansas City, Kan., 1500 tons, to Wisconsin Bridge & Iron Co.

Arkansas Light & Power Co., Hot Springs, Ark., tainter gates, 200 tons, to Lakeside Bridge & Steel Co.

Corona Chemical Division, Pittsburgh Plate Glass Co., Milwaukee, 150 tons, to Lakeside Bridge & Steel Co.

Lunkenheimer Co., Cincinnati, machine shop, 650 tons, to Moss Iron Works.

Cincinnati Times-Star, building addition, Cincinnati, 170 tons, to L. Schreiber & Sons.

### Structural Projects Pending

Inquiries for fabricated steel work include the following:

Maddock Pottery Co., Trenton, N. J., plant addition, 2250 tons.

General Electric Co., building at Fifty-eighth and Elmwood Streets, Philadelphia, 600 tons.

Manasquan River bridge, Point Pleasant, N. J., 700 tons.

Philadelphia Rapid Transit Co., car barn in Philadelphia, 750 tons.

First National Bank, New Bedford, Mass., 700 tons.

Subway, Brooklyn, DeKalb and Bedford Avenues to Kent Avenue, 3300 tons.

Apartment hotel, Lexington Avenue and Forty-eighth Street, New York, 5000 tons.

Chesapeake & Potomac Telephone Co., Huntington, W. Va., 400 tons.

Ford Motor Co., assembly plant, Dallas, Tex., 1700 tons.

Federal aid bridge over Missouri River, Chamberlain, S. D., 1300 tons.

Muscle Shoals, Tenn., 53 dam gates, 2300 tons.

Consumers Power Co., power house extensions, Saginaw, Mich., 350 tons, and Grand Rapids, Mich., 400 tons.

United States Bond & Mortgage Co., nine-story building, Detroit, 420 tons.

McCorkle Pipe Line Co., Fort Worth, Tex., oil storage tanks, 11,000 tons.

Cazenovia Creek bridge, Buffalo, 100 tons.

Columbus Bolt Works, Columbus, Ohio, forge shop, 300 tons.

Stadium, Manual High School, Louisville, Ky., 225 tons, bids to be asked shortly.

McCrary Stores Corporation, Dayton, Ohio, 400 tons.

Transmission towers, Fall River, Stone & Webster, Inc., Boston, 200 tons.

Garage, Springfield, Mass., 750 tons.

## RAILROAD EQUIPMENT BUYING

### Chesapeake & Ohio Places Orders for 2000 or 3000 Cars and Will Buy More

After taking bids on 37,500 tons of steel in furtherance of a plan to furnish the steel for cars it will have built, the Chesapeake & Ohio Railroad has decided to buy the cars from car builders, the latter instead of the railroad to furnish the material. The program calls for a total of 7600 cars. The Missouri Pacific has ordered 1000 automobile cars. The only outstanding locomotive inquiry is from the Chesapeake & Ohio, for 100.

The Chesapeake & Ohio has placed 1000 box cars each with Pullman Co. and Liberty Car & Mfg. Co. and is reported to have awarded an equal number to the Newport News Ship Building & Dry Dock Co. In addition it is in the market for 3000 gondola and 600 ballast cars and possibly 1000 cars besides, making a total program of 7600 cars.

The Missouri Pacific has placed 1000 automobile cars with the Pennsylvania Car Co. and has contracted for repairs on 600 box cars with the Sheffield Car & Equipment Co. and on 400 gondola cars with the American Car & Foundry Co. It will also repair 200 gondola cars in its own shops and is still in the market for 2000 refrigerator cars for the American Refrigerator Transit Co.

The Burlington has placed 6 combination baggage and mail cars with American Car & Foundry Co.

The Rock Island has ordered 8 dining and 5 buffet baggage cars from the Pullman Co.

The Santa Fe has placed 10 chair, 10 smoking, 10 postal, 10 three-compartment cars and 10 coaches with Pullman Co.

The Nickel Plate has awarded 4 mail and express, 3 baggage express cars and 5 coaches to Pullman Co.

The Southern Pacific has placed 6 electric motor coaches with St. Louis Car Co., 10 interurban coaches with the Pullman Co., 4 coaches, 5 chair and 4 baggage and mail cars with the Standard Steel Car Co.

The New York Central is inquiring for 25 or more horse cars.

The Denver & Rio Grande Western is inquiring for 25 to 35 automobile cars.

The Gary Tube Co. has placed 2 switching locomotives with the Baldwin Locomotive Works.

The Florida East Coast Railroad is in the market for 450 freight cars and 20 cabooses.

The Chesapeake & Ohio Railroad has inquired for 100 locomotives.

The Pennsylvania Railroad has announced that it has ordered the construction of 50 suburban locomotives and 12 all-steel dining cars at its Altoona, Pa., shops.

# Prices Finished Iron and Steel f.o.b. Pittsburgh

Carload Lots

## Plates

Sheared, tank quality, base, per lb. . . . . 2.30c. to 2.40c.

## Structural Materials

Beams, channels, etc., base, per lb. . . . . 2.30c. to 2.40c.  
Sheet piling . . . . . 2.45c. to 2.55c.

## Iron and Steel Bars

Soft steel bars, base, per lb. . . . . 2.30c. to 2.40c.  
Soft steel bars for cold finishing . . . . . \$3 per ton over base  
Reinforcing steel bars, base . . . . . 2.30c. to 2.40c.  
Refined iron bars, base, per lb. . . . . 3.10c. to 3.15c.  
Double refined iron bars, base, per lb. . . . . 4.75c.  
Stay bolt iron bars, base, per lb. . . . . 7.75c. to 8c.

## Hot-Rolled Flats

Hoops, base, per lb. . . . . 2.90c. to 3.00c.  
Bands, base, per lb. . . . . 2.90c.  
Strips, base, per lb. . . . . 2.75c. to 2.90c.

## Cold-Finished Steel

Bars and shafting, base, per lb. . . . . 3c.  
Bars and shafting, I.C.I., per lb. . . . . 3.25c.  
Bars, S. A. E. Series, No. 2100 . . . . . 4.75c.  
Bars, S. A. E. Series, No. 2300 . . . . . 6.25c.  
Bars, S. A. E. Series, No. 3100 . . . . . 5.25c.  
Strips, base, per lb. . . . . 4.75c.

## Wire Products

(To jobbers in car lots)

Nails, base, per keg . . . . . \$3.00  
Galvanized nails, 1 in. and over . . . . . \$2.25 over base  
Galvanized nails, less than 1 in. . . . . 2.50 over base  
Bright plain wire, base, No. 9 gage, per 100 lb. . . . . \$2.75  
Annealed fence wire, base, per 100 lb. . . . . 2.90  
Spring wire, base, per 100 lb. . . . . 3.70  
Galvanized wire No. 9, base, per 100 lb. . . . . 3.35  
Galvanized barbed, base, per 100 lb. . . . . 3.80  
Galvanized staples, base, per keg . . . . . 3.80  
Painted barbed wire, base, per 100 lb. . . . . 3.45  
Polished staples, base, per keg . . . . . 3.45  
Cement coated nails, base, per count keg . . . . . \$2.50 to 2.60  
Bale ties, carloads to jobbers . . . . . 75 and 2 1/2 per cent off list  
Woven fence, carloads (to jobbers) . . . . . 67 1/2 per cent off list  
Woven fence, carloads (to retailers) . . . . . 65 per cent off list

## Bolts and Nuts

Machine bolts, small, rolled threads, 60, 10 and 10 per cent off list  
Machine bolts, all sizes, cut threads, 60 and 10 per cent off list  
Carriage bolts, 3/4 x 6 in.:  
Smaller and shorter, rolled threads, 60 and 10 per cent off list  
Carriage bolts, cut threads, all sizes, 50, 10 and 10 per cent off list  
Lag bolts . . . . . 65 and 10 per cent off list  
Plow bolts, Nos. 1, 2 and 3 heads . . . . . 50 and 10 per cent off list  
Other style heads . . . . . 20 per cent extra  
Machine bolts, c.p.c. and t. nuts, 3/4 x 4 in., 50 and 10 per cent off list  
Larger and longer sizes . . . . . 50 and 10 per cent off list  
Hot pressed squares or hex. nuts, blank . . . . . 4.50c. off list  
Hot pressed nuts, tapped . . . . . 4.50c. off list  
C.p.c. and t. square or hex. nuts, blank . . . . . 4c. to 4.25c.  
C.p.c. and t. square or hex. nuts, tapped . . . . . 4c. to 4.25c.  
Semi-finished hex. nuts:  
1/4 in. and smaller, U. S. S. . . . . 80 and 5 per cent off list  
1/2 in. and larger, U. S. S. . . . . 75 and 5 per cent off list  
Small sizes, S. A. E. . . . . 80, 10 and 5 per cent off list  
S. A. E., 1/2 in. and larger . . . . . 75, 10 and 5 per cent off list  
Stove bolts in packages . . . . . 75, 10 and 5 per cent off list  
Stove bolts in bulk . . . . . 75, 10, 5 and 2 1/2 per cent off list  
Tire bolts . . . . . 60 and 10 per cent off list  
Bolt ends with hot pressed nuts . . . . . 60 and 5 per cent off list  
Bolt ends with cold pressed nuts . . . . . 50 and 5 per cent off list  
Turnbuckles, with ends, 1/2 in. and smaller, 50 to 55 and 5 per cent off list  
Turnbuckles, without ends, 1/2 in. and smaller, 65 and 5 to 70 and 10 per cent off list  
Washers . . . . . 5c. to 5.25c. off list

## Semi-Finished Castellated and Slotted Nuts

(To jobbers and consumers in large quantities f.o.b. Pittsburgh.)

Per 1000			Per 1000		
S. A. E.	U. S. S.		S. A. E.	U. S. S.	
1/4-in. . . . .	\$4.25	\$4.25	3/8-in. . . . .	\$13.25	\$13.50
1/2-in. . . . .	4.90	4.90	1/2-in. . . . .	16.25	16.50
3/4-in. . . . .	5.90	6.25	3/4-in. . . . .	22.50	23.00
1-in. . . . .	7.50	8.50	1-in. . . . .	34.00	34.00
1 1/2-in. . . . .	9.75	10.00	1 1/2-in. . . . .	53.00	55.00

Larger sizes—Prices on application.

## Cap and Set Screws

Milled hex. head cap screws . . . . . 75, 10 and 5 per cent off list  
Milled standard set screws, case hardened, 75, 10 and 5 per cent off list  
Milled headless set screws, cut thread, 75, 10 and 5 per cent off list  
Upset hex. head cap screws, U. S. S. thread, 80, 10 and 10 per cent off list  
Upset hex. head cap screws, S. A. E. thread, 80, 10 and 10 per cent off list  
Milled studs . . . . . 65 and 10 per cent off list

## Rivets

Large structural and ship rivets, base, per 100 lb. \$2.65 to \$2.75  
Small rivets . . . . . 70 and 10 per cent off list

## Track Equipment

Spikes, 1/8 in. and larger base, per 100 lb. . . . . \$3.00  
Spikes, 1/2 in., 3/4 in. and 5/8 in., per 100 lb. . . . . \$3.25 to 3.50  
Spikes, 1/4 in. . . . . 3.25 to 3.50  
Spikes, boat and barge, base, per 100 lb. . . . . 3.25 to 3.50  
Track bolts, 1/2 in. and larger, base, per 100 lb. . . . . 4.00 to 4.25  
Track bolts, 1/2 in. and 5/8 in., base, per 100 lb. . . . . 4.50 to 5.00  
Tie plates, per 100 lb. . . . . 2.55 to 2.60  
Angle bars, base, per 100 lb. . . . . 2.75

## Welded Pipe

### Butt Weld

Inches	Steel	Galv.	Inches	Iron	Galv.
	Black			Black	
1/4	45	19 1/2	1/4 to 3/4	+11	+39
1/2 to 3/4	51	25 1/2	1/2	22	2
1/2	56	42 1/2	3/4	28	11
3/4	60	48 1/2	1 to 1 1/2	30	13
1 to 3	62	50 1/2			

### Lap Weld

2	55	43 1/2	2	23	7
2 1/2 to 6	59	47 1/2	2 1/2	26	11
7 and 8	56	43 1/2	3 to 6	28	13
9 and 10	54	41 1/2	7 to 12	26	11
11 and 12	53	40 1/2			

### Butt Weld, extra strong, plain ends

1/4	41	24 1/2	2 to 3	61	50 1/2
1/2 to 3/4	47	30 1/2	3/4 to 1	+19	+54
1/2	53	42 1/2	1 1/2	31	7
3/4	58	47 1/2	2	28	12
1 to 1 1/2	60	49 1/2	1 to 1 1/2	30	14

### Lap Weld, extra strong, plain ends

2	53	42	2	23	9
2 1/2 to 4	57	46 1/2	2 1/2 to 4	29	15
4 1/2 to 6	56	45 1/2	4 1/2 to 6	28	14
7 to 8	52	39 1/2	7 to 8	21	7
9 and 10	45	32 1/2	9 to 12	16	2
11 and 12	44	31 1/2			

To the large jobbing trade the above discounts are increased by one point, with supplementary discount of 5 per cent on black and 1 1/2 points, with a supplementary discount of 5 per cent on galvanized.

## Boiler Tubes

Lap Welded Steel	Charcoal Iron
2 to 2 1/4 in. . . . . 27	1 1/2 in. . . . . +18
2 1/2 to 2 3/4 in. . . . . 37	1 3/4 to 1 7/8 in. . . . . +8
3 in. . . . . 40	2 to 2 1/4 in. . . . . —
3 1/4 to 3 1/2 in. . . . . 42 1/2	2 1/2 to 3 in. . . . . —7
4 to 13 in. . . . . 46	3 1/4 to 4 1/2 in. . . . . —9

Less carload lots 4 points less.

## Standard Commercial Seamless Boiler Tubes

Cold Drawn	
1 in. . . . . 55	3 and 3 1/4 in. . . . . 36
1 1/4 and 1 1/2 in. . . . . 47	3 1/2 and 3 3/4 in. . . . . 37
1 3/4 in. . . . . 31	4 in. . . . . 41
2 and 2 1/4 in. . . . . 22	4 1/2 in. and 5 in. . . . . 33
2 1/2 and 2 3/4 in. . . . . 32	
Hot Rolled	
3 and 3 1/4 in. . . . . 38	4 in. . . . . 43
3 1/2 in. and 3 3/4 in. . . . . 39	

Less carloads, 4 points less. Add \$8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of net larger outside diameter and heavier gage.

## Seamless Mechanical Tubing

Carbon under 0.30, base . . . . . 85 per cent off list  
Carbon 0.30 to 0.40, base . . . . . 83 per cent off list  
Plus usual differentials and extras for cutting. Warehouse discounts range higher.

## Seamless Locomotive and Superheater Tubes

Cents per Ft.	
2-in. O.D. 12 gage . . . . . 15	2 1/4-in. O.D. 10 gage . . . . . 20
2-in. O.D. 11 gage . . . . . 16	3-in. O.D. 7 gage . . . . . 35
2-in. O.D. 10 gage . . . . . 17	1 1/2-in. O.D. 9 gage . . . . . 15
2 1/4-in. O.D. 12 gage . . . . . 17	5 1/2-in. O.D. 9 gage . . . . . 55
2 1/4-in. O.D. 11 gage . . . . . 18	5 1/2-in. O.D. 9 gage . . . . . 57

## Tin Plate

Standard cokes, per base box . . . . . \$5.50

## Terne Plate

(Per Package, 20 x 28 in.)

8-lb. coating, 100 lb. base . . . . . \$11.00	20-lb. coating I. C. . . . . \$14.90
8-lb. coating I. C. . . . . 11.30	25-lb. coating I. C. . . . . 16.20
12-lb. coating I. C. . . . . 12.70	30-lb. coating I. C. . . . . 17.35
15-lb. coating I. C. . . . . 13.95	35-lb. coating I. C. . . . . 18.35
	40-lb. coating I. C. . . . . 19.35

## Sheets

### Blue Annealed

Nos. 9 and 10 (base), per lb. . . . . 2.85c. to 3c.  
Box Annealed, One Pass Cold Rolled  
No. 28 (base), per lb. . . . . 3.70c. to 3.85c.

### Automobile Sheets

Regular auto body sheets, base (22 gage), per lb. . . . . 5.35c.  
Galvanized  
No. 28 (base), per lb. . . . . 4.80c. to 5c.

### Long Ternes

No. 28 gage (base), 8-lb. coating, per lb. . . . . 5.30c.  
Tin-Mill Black Plate  
No. 28 (base), per lb. . . . . 3.85c.



# Prices of Raw Materials, Semi-Finished and Finished Products

## Ores

### Lake Superior Ores, Delivered Lower Lake Ports

Old range Bessemer, 55 per cent iron.....	\$5.65
Old range non-Bessemer, 51½ per cent iron.....	4.90
Mesabi Bessemer, 55 per cent iron.....	5.40
Mesabi non-Bessemer, 51½ per cent iron.....	4.75

### Foreign Ore, per Unit, c.i.f. Philadelphia or Baltimore

Iron ore, low phos., copper free, 55 to 58 per cent iron in dry Spanish or Algerian..	11.00c.
Iron ore, Swedish, average 66 per cent iron	9.50c.
Manganese ore, washed, 51 per cent manganese, from the Caucasus, nominal.....	45c.
Manganese ore, ordinary, 48 per cent manganese, from the Caucasus.....	42c.
Manganese ore, Brazilian or Indian, nominal	42c.
Tungsten ore, per unit, in 60 per cent concentrates .....	\$8.75 to \$10.00
Chrome ore, basic, 48 per cent Cr <sub>2</sub> O <sub>3</sub> , crude, per ton, c.i.f. Atlantic seaboard.....	19.00 to 22.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS <sub>3</sub> , New York.....	75c. to 85c.

## Ferroalloys

Ferromanganese, domestic, 80 per cent, furnace, or seaboard, per ton.....	\$107.50
Ferromanganese, British, 80 per cent f.o.b. Atlantic port, duty paid.....	107.50
Ferrosilicon, 50 per cent, delivered.....	75.00
Ferrosilicon, 75 per cent.....	140.00
Ferrotungsten, per lb. contained metal....	90c. to 93c.
Ferrochromium, 4 to 6 per cent carbon, 60 to 70 per cent Cr. per lb. contained Cr. delivered .....	10.75c.
Ferrochromium, 6 to 7 per cent carbon, 60 to 70 per cent Cr., per lb.....	10.50c.
Ferrovandium, per lb. contained vanadium	\$3.50 to \$4.00
Ferrocobaltititanium, 15 to 18 per cent, per net ton .....	200.00

## Spiegeleisen, Bessemer Ferrosilicon and Silvery Iron

(Per gross ton furnace unless otherwise stated)

Spiegeleisen, domestic, 19 to 21 per cent.....	\$36.00 to \$37.00
Spiegeleisen, domestic, 16 to 19 per cent.....	35.00 to 36.00
Ferrosilicon, Bessemer, 10 per cent, \$41.50; 11 per cent, \$44; 12 per cent, \$46.50; 14 to 16 per cent, (electric furnace) \$40.00.	
Silvery iron 5 per cent, \$29.00; 6 per cent, \$30.00; 7 per cent, \$31.00; 8 per cent, \$32.50; 9 per cent, \$34.50; 10 per cent, \$36.50; 11 per cent, \$39.00; 12 per cent, \$41.50.	

## Fluxes and Refractories

Fluorspar, 80 per cent and over calcium fluoride, not over 5 per cent silica, per net ton f.o.b. Illinois and Kentucky mines.	\$20.00 to \$22.00
Fluorspar, 85 per cent and over calcium fluoride, not over 5 per cent silica, per net ton f.o.b. Illinois and Kentucky mines.	22.00 to 23.50
Per 1000 f.o.b. works:	
Fire Clay	
Pennsylvania .....	High Duty \$42.00 to \$45.00 Moderate Duty \$37.00 to \$42.00
Maryland .....	47.00
Ohio .....	42.00 to 43.00
Kentucky .....	42.00 to 43.00
Illinois .....	37.00 to 42.00
Missouri .....	42.00 to 45.00
Ground fire clay, per net ton.....	6.00 to 7.00
Silica Brick:	
Pennsylvania .....	38.00 to 40.00
Chicago .....	49.00
Birmingham .....	50.00
Ground silica clay, per net ton.....	8.00
Magnesite Brick:	
Standard size, per net ton (f.o.b. Baltimore and Chester, Pa.).....	45.00
Grain magnesite, per net ton (f.o.b. Baltimore and Chester, Pa.).....	40.00
Chrome Brick:	
Standard size, per net ton.....	47.00

## Semi-Finished Steel, F.O.B. Pittsburgh or Youngstown, per gross ton

Rolling billets, 4-in. and over .....	\$40.00
Rolling billets, 2-in. and under.....	40.00
Forging billets, ordinary carbons.....	45.00
Sheet bars, Bessemer .....	42.50
Sheet bars, open-hearth .....	42.50
Slabs .....	40.00
Wire rods, common soft, base, No. 5 to ¼-in.....	51.00
Wire rods, common soft, coarser than ¼-in...\$2.50 over base	
Wire rods, screw stock.....	\$5.00 per ton over base
Wire rods, carbon, 0.20 to 0.40.....	3.00 per ton over base
Wire rods, carbon 0.41 to 0.55.....	5.00 per ton over base
Wire rods, carbon 0.56 to 0.75.....	7.50 per ton over base
Wire rods, carbon over 0.75.....	10.00 per ton over base
Wire rods, acid .....	15.00 per ton over base
Skelp, grooved, per lb.....	2.30c.
Skelp, sheared, per lb.....	2.30c.
Skelp, universal, per lb.....	2.30c.

## Finished Iron and Steel, F.O.B. Mill

Rails, heavy, per gross ton.....	\$43.00
Rails, light, new steel, base, lb.....	2c.
Rails, light, rerolled, base, per lb.....	1.85c. to 1.90c.
Spikes, ¾-in. and larger, base, per 100 lb....	\$3.00
Spikes, ½-in. and smaller, base, per 100 lb....	\$3.25 to 3.50
Spikes, boat and barge, base, per 100 lb.....	3.25 to 3.50
Track bolts, ¾-in. and smaller, base, per 100 lb.	4.00 to 4.25
Track bolts, ¾-in. and larger, base, per 100 lb.	4.50 to 5.00
Tie plates, per 100 lb.....	2.55 to 2.60
Angle bars, per 100 lb.....	2.75
Bars, common iron, base, per lb., Chicago mill	2.40c.
Bars, common iron, Pittsburgh mill.....	2.40c.
Bars, rail steel reinforcing, base, per lb.....	2.10c. to 2.15c.
Rail steel bars, base, per lb., Chicago mill....	2.30c.
Cold finished steel bars, base, Chicago, per lb..	2c.
Ground shafting, base, per lb.....	3.40c.
Cut nails, base, per keg.....	\$3.00 to \$3.15

## Alloy Steel

S. A. E. Series Numbers	Bars 100 lb.
2100* (½% Nickel, 10 to 20 per cent Carbon)...	\$3.50
2300 (3½% Nickel) .....	5.00
2500 (5% Nickel) .....	\$6.50 to 7.00
3100 (Nickel Chromium) .....	4.00
3200 (Nickel Chromium) .....	5.75 to 6.00
3300 (Nickel Chromium) .....	8.00 to 8.25
3400 (Nickel Chromium) .....	7.00 to 7.25
5100 (Chromium Steel) .....	3.75
5200* (Chromium Steel) .....	7.50 to 8.00
6100 (Chromium Vanadium bars) .....	4.75 to 5.00
6100 (Chromium Vanadium spring steel).....	4.50 to 4.75
9250 (Silicon Manganese spring steel).....	3.75 to 4.00
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chromium, 0.15 Vanadium) .....	4.75
Chromium Molybdenum bars (0.80—1.10 Chromium, 0.25—0.40 Molybdenum) .....	4.50 to 4.75
Chromium Molybdenum bars (0.50—0.70 Chromium, 0.15—0.25 Molybdenum) .....	4.25
Chromium Molybdenum spring steel (1—1.25 Chromium, 0.30—0.50 Molybdenum).....	4.75 to 5.00

Above prices are for hot-rolled alloy steel bars, forging quality, per 100 lb., f.o.b. Pittsburgh. Billets 4 x 4 in. and larger are \$10 per gross ton less than net ton price for bars of same analysis. On smaller than 4 x 4-in. billets the net ton bar price applies.

\*Not S.A.E. specifications, but numbered by manufacturers to conform to S.A.E. system.

## Freight Rates

All rail freight rates from Pittsburgh on finished iron and steel products, carload lots, 36,000 lb. minimum carload, per 100 lb.:

Philadelphia, domestic.....\$0.32	Buffalo .....	\$0.265	St. Louis .....	\$0.43	*Pacific Coast .....	\$1.15
Philadelphia, export..... 0.235	Cleveland .....	0.215	Kansas City .....	0.735	*Pac. Coast, ship plates 1.20	
Baltimore, domestic..... 0.31	Cleveland, Youngstown		Kansas City (pipe)...	0.705	Birmingham .....	0.68
Baltimore, export..... 0.225	Comb. ....	0.19	St. Paul .....	0.60	Memphis .....	0.66
New York, domestic..... 0.34	Detroit .....	0.29	Omaha .....	0.735	Jacksonville, all rail..	0.70
New York, export..... 0.255	Cincinnati .....	0.29	Omaha .....	0.705	Jacksonville, rail and	
Boston, domestic..... 0.365	Indianapolis .....	0.31	*Denver .....	1.15	water .....	0.415
Boston, export..... 0.255	Chicago .....	0.34	†Denver (pipe).....	1.17	New Orleans .....	0.67

\*Applies minimum carload 80,000 lb. †Minimum loading 48,000 lb.

Rates from Atlantic Coast ports (i.e., New York, Philadelphia and Baltimore) to Pacific Coast ports of call on most steamship lines, via the Panama Canal, are as follows: Pig iron, 35c.; ship plates, 40c.; ingots and muck bars, structural steel, common wire products, including cut or wire nails, spikes, and wire hoops, 40c.; sheets and tin plates, 40c.; sheets No. 12 gage and lighter, 50c.; rods, 40c.; wire rope cables and strands, 45c.; wire fencing, netting and stretcher, 40c.; pipes not over 12 in. in diameter, 55c.; over 12 in. in diameter, 2½c. per in. or fraction thereof additional. All rates per 100 lb. in carload lots, minimum 36,000 lb.

## Plans of New Companies

The Ness Electric Welding Machine Co., 48 Howard Street, New York, has been incorporated with \$100,000 capital stock to manufacture electric welding machines and parts. It has acquired and will enlarge a business established for several years. M. A. Ness and D. T. Pape are the principals.

Gardner & Bancroft, 19 Washington Place, East Orange, N. J., have been incorporated with \$50,000 capital stock and will conduct a general electrical contracting business, in fixtures, appliances and apparatus.

The Bliss Novelty Corporation, Bliss, N. Y., has been organized to manufacture novelties, succeeding the Bliss Mfg. Co. Burt J. Pepper is president and Claude Shaw, secretary.

The Service Electric Supply Co., Inc., New Britain, Conn., has been organized with \$50,000 capital stock to act as jobber in electrical equipment. H. S. Bamforth heads the company.

Benjamin Auto Parts, Inc., 19-21 West Hemlock Street, Hazleton, Pa., incorporated with \$25,000 capital stock, will act as jobber in automobile equipment, in conjunction with a cylinder regrinding establishment. M. Preschett heads the company.

The Modern Die & Plate Press Mfg. Co., with main office and plant at Belleville, Ill., and New York office at Morton Building, 116 Nassau Street, has been incorporated to manufacture automatic die presses, hand stamping and copper plate presses. Julius F. Seib is president.

The Cohoes Iron Foundry & Machine Co., Cohoes, N. Y., has been incorporated with \$50,000 capital stock to continue a business which has been established 50 years in the manufacture of castings. H. E. Johnston is president.

The Radio Development Co., 87 Main Street, East Orange, N. J., has been organized to conduct experimental and development work in radio equipment. T. R. Thomas heads the company.

The Chamberlin-Rowe Aircraft Corporation, Hasbrouck Heights, N. J., has been organized to manufacture airplanes. It has rented hangar space and a flying field and for the present will confine activities to rebuilding airplanes. The company will manufacture a five-place cabin commercial machine, built around the Curtis OX5, 90-hp. engine. It will also deal in equipment for airplanes, including engines, accessories, instruments, spare parts, etc. B. L. Rowe is treasurer.

The Ex-Cel-Air Radio & Mfg. Co., Inc., 27 Dodd Street, Bloomfield, N. J., has been incorporated with \$50,000 capital stock and will manufacture and distribute wireless instruments and apparatus, also electrical appliances. Considerable equipment has been purchased. R. W. Wilkes, production manager of the Simms Magneto Co., East Orange, N. J., is president; Percy W. Babbitt, sales engineer, and Carl Jacobsen, purchasing agent, of the Simms Co., will be vice-president and secretary-treasurer, respectively.

The Crystal Silver Works, 836-40 Kensington Avenue, Buffalo, incorporated with capital stock of \$50,000, has taken over the business of the Crystal Silver Works, established two years ago, and will continue its business in the manufacture of silver plated hollow-ware. J. A. Watt heads the company.

The Glassmobile Co., Peterboro Street at Cass Avenue, Detroit, has been incorporated with capital stock of \$50,000 to manufacture automotive equipment. It owns a plant comprising 13,000 sq. ft. of floor space and is now in full operation. W. C. Loud is president.

The Allan Lock Corporation, care of Leopold Blumberg, 35 Nassau Street, New York, has been incorporated with \$50,000 capital stock to continue the business of a Connecticut corporation in the manufacture of locks and hardware products. J. H. Richter and A. and L. Rosenberg are the incorporators.

The Midvale Paper Board Co., Bogota, N. J., has been incorporated with \$100,000 capital stock and will manufacture paper board products. It plans to locate a factory in northern New York. S. C. Wood, G. V. Reilly, and R. K. Thistle are the incorporators.

The Damon Type Founders Co., Inc., has been formed with \$1,000,000 capital stock, to succeed to the business of George Damon & Son, 44 Beekman Street, New York. The company plans to increase the manufacture of general

supplies and machinery for printers. At present its foundry is located in Philadelphia, but a plant will be purchased in New York next fall. D. Everett Damon is president; Daniel J. Casey, vice-president, and T. F. McGough, treasurer.

The Roberts Elevator Co., 430 West Broadway, New York, incorporated with capital stock of \$75,000, will operate a repair plant for elevators. J. M. Martin and M. Osmund are the incorporators.

The Fahrigr Bearing Metal Co., 25 Renwick Street, New York, has been incorporated with capital stock of \$50,000 to continue the business of the Fahrigr Metal Co., in the manufacture of bronze and other metal products. L. May, Jr., and E. Murray are the incorporators.

Habaco, Inc., 17 West Sixtieth Street, New York, incorporated with capital stock of \$20,000 will act as factory representative for the G. L. W. spring oiler and other automotive equipment.

## Trade Changes

The Quigley Furnace Specialties Co., New York, will move its Chicago office to larger quarters at 9 South Clinton Street, on May 1.

The Cleveland Duplex Machinery Co. is exclusive agent for the Reed-Prentice Co., Worcester, Mass., in Cleveland territory, for all types of standard and special machinery pertaining to the automotive industry, and G. J. Hawkey is the representative of the Cleveland Duplex company.

The Landis Tool Co., Waynesboro, Pa., and the Kearney & Trecker Corporation, Milwaukee, will join Warner & Swasey in the latter's store and show room at 618-622 West Washington Boulevard, Chicago. Heretofore the space in this building has been shared by Warner & Swasey with the Hendey Machine Co., Torrington, Conn.

The National Twist Drill & Tool Co., Detroit, has moved its Chicago office from the Sharpless Building to 26 South Jefferson Street.

The Reed-Prentice Co., Worcester, Mass., manufacturer of engine lathes, radial drills, milling machines, planers, etc., has established a sales office in Machinery Hall, corner of Clinton Street and Washington Boulevard, Chicago, in charge of Lane Scofield.

McKinney, Marsh & Cushing, Inc., 4147 Cass Avenue, Detroit, have succeeded to the business of the Brotherton Co. and assumed all of its contracts.

The Fitzsimons Co. has moved its Cleveland district sales office to 1160 Union Trust Building.

The Morgan Steel Co., 1230 Callowhill Street, Philadelphia, has engaged in the steel jobbing business, specializing in cold finished steels, including screw stock, shafting, cold rolled strip, drill rods, tool steel and sheets. F. T. Morgan, president and general manager, was for several years Philadelphia branch warehouse manager for Hogan & Son of New York, and latterly was district sales representative in Philadelphia for the American Tube & Stamp- ing Co., Bridgeport, Conn.

Representation in New York of the American Frog & Switch Co., Hamilton, Ohio, has been discontinued. The office, which is located at 1207 Diamond Bank Building, Pittsburgh, will handle all inquiries and sales direct.

The Wickman Screw Works, manufacturer of standard and special parts, with office and works at 420 Neptune Street, Pittsburgh, has been succeeded by the Union Screw & Mfg. Co., which will assume all contracts. Ownership and active management remain unchanged. O. C. Zimmerman is vice-president.

The Cleveland office of William K. Stamets, maker of machine tools, has been moved to 774-76 Rockefeller Building.

The U. T. Hungerford Brass & Copper Co., Boston, is located in its newly constructed modern warehouse at 411 D Street, South Boston. The plant is fully equipped with practical, cost-reducing labor-saving devices for storing, handling and shipping brass and copper materials.

The Donner Steel Co., Buffalo, has established a district sales offices at the Union Trust Building, Cleveland. H. C. Richardson in charge.

The McMyler-Interstate Co., Cleveland, has opened a branch office at 619 Genesee Building, Buffalo. J. E. McFate is district representative.



# NON-FERROUS METALS

## The Week's Prices

	Copper, New York		Tin (Spot)		Lead		Zinc	
	Lake	Electrolytic*	New York	St. Louis	New York	St. Louis	New York	St. Louis
April 9.....	13.62½	13.12½	51.00	8.37½	8.25	6.57½	6.22½	
10.....	13.62½	13.12½	50.50	8.37½	8.25	6.55	6.20	
11.....	13.62½	13.00	49.00	8.25	8.00	6.45	6.10	
12.....	13.62½	13.00	48.87½	8.25	8.00	6.45	6.10	
14.....	13.62½	13.12½	49.25	8.12½	7.75	6.47½	6.12½	
15.....	13.62½	13.25	49.25	8.12½	7.75	6.42½	6.07½	

\*Refinery quotation; delivered price ¼c. higher.

## New York

NEW YORK, April 15.

No improvement in demand for any of the metals has appeared. Despite favorable statistical reports in the copper and zinc industries, prices have declined and buying has not improved. There has been only a moderate demand for tin in spite of lower price levels. The lead market has continued its downward course.

**Copper.**—Because March statistics were so favorable, in that they showed a reduction in stocks of about 52,000,000 lb., it was believed that the electrolytic copper market would take on new life. The statistics showed plainly a reduction in production at the same time indicating that shipments of about 271,000,000 lb. were among the largest ever recorded. Of this total 160,000,000 lb. was for domestic use and 111,000,000 lb. for foreign consumption. The decline which has been in progress for some time continued however during the week until at one time the metal sold as low as 13.25c., delivered. Since Saturday inclusive there has been more inquiry with an improvement in sales and today the market is firmer at 13.50c., delivered. Lake copper is largely nominal at 13.62½c., delivered.

**Tin.**—On two days during the last week a fairly good business was done but on other days the market was quiet and featureless. On April 9 consumers suddenly came into the market and bought heavily, taking about 75 per cent of the total sales on that day of 600 tons. This was disposed of principally by only two sellers. This hopeful sign did not last long, the market again turning dull. On Friday, April 11, however, owing to a sharp recession in London, good buying developed and sales were made all the way up from 47.37½c. to 49c. paid for April delivery, and with futures sold up to 48.75c. The total sales on that day were 400 to 500 tons, about evenly divided between consumers and dealers. On Saturday, April 12, there were sales of about 200 tons and yesterday in a quiet market about 150 tons changed hands. Today the market was quite active, the volume of inquiry being heavy with sales in good volume, about 500 tons of futures changing hands at 48.25c. to 49c. Spot Straits tin was quoted nominal today at 49.25c., New York. Prices in the London market today were about £15 to £16 per ton lower than a week ago, with spot standard quoted at £243 10s., with future standard at £243 5s. and spot Straits at £245. Some expressions of opinion are to the effect that a bull campaign may soon develop again but there is doubt whether prices will reach the high point attained on the last movement. Arrivals thus far this month are reported as 5715 tons with the quantity afloat as 6114 tons.

**Lead.**—Buying of lead is only hand-to-mouth and the market continues decidedly easy. The leading interest reduced its contract quotation twice during the week, to 8.50c. on April 9 and to 8.25c., New York, on April 11. The outside market is quoted at 7.70c. to 7.80c., St. Louis, or 8.12½c., New York.

**Zinc.**—Prices for prime Western zinc have continued to decline until they are considerably below the cost of production at the present level of prices for ore. It is believed by some that the bottom has been reached, the metal being quoted as low as 6.05c. to 6.10c., St. Louis,

or 6.40c. to 6.45c., New York. One sizeable inquiry was before the market today. The statistics for March were exceedingly favorable showing a decline in stocks of about 5000 tons, despite heavy production. Exports were also large at a total of about 5000 tons. As in the case of copper, however, the favorable technical position of the market has had thus far no effect.

**Nickel.**—Quotations for shot and ingot nickel are unchanged at 29c. to 32c. per lb., with electrolytic nickel held at 30c. to 32c. by the leading producers. In the outside market both shot and ingot nickel are quoted at 28c. to 32c. per lb.

**Antimony.**—There is very little demand and the market is nominally unchanged, with Chinese metal in wholesale lots quoted at 10c. per lb., New York, duty paid.

**Aluminum.**—Virgin metal, 98 to 99 per cent pure, is quoted by importers at 28c. per lb., duty paid, delivered. The leading domestic producer does not make public its quotation.

**Old Metals.**—There is not much change in the market. Dealers' selling prices are as follows:

	Cents Per Lb.
Copper, heavy and crucible.....	13.00
Copper, heavy and wire.....	12.00
Copper, light and bottoms.....	11.00
Heavy machine composition.....	10.75
Brass, heavy.....	8.25
Brass, light.....	6.75
No. 1 red brass or composition turnings..	9.50
No. 1 yellow rod brass turnings.....	8.00
Lead, heavy.....	6.50
Lead, tea.....	5.50
Zinc.....	4.75
Cast aluminum.....	17.50
Sheet aluminum.....	18.00

## Chicago

APRIL 15.—Tin and lead have declined while copper has advanced. Tin has fluctuated widely during the week, but at the moment is recovering part of its losses. Lead buying is confined to covering by short interests. Zinc is quieter owing to reduced operations of galvanizers. Trading in copper has improved sufficiently to stiffen prices. Among the old metals grades of copper and brass have declined slightly. We quote in carload lots: Lake copper, 14c.; tin, 52.75c.; lead, 8.10c.; spelter, 6.37½c.; antimony, 12c., in less than carload lots. On old metals we quote copper wire, crucible shapes and copper clips, 10.50c.; copper bottoms, 9c.; red brass, 8.50c.; yellow brass, 7c.; lead pipe, 6c.; zinc, 4c.; pewter, No. 1, 28c.; tin foil, 32c.; block tin, 38c.; all buying prices for less than carload lots.

## Lead in 1923

The total output of refined primary lead in the United States, according to the data compiled by C. E. Siebenthal and A. Stoll of the U. S. Geological Survey, was 618,008 net tons in 1923 as compared with 553,662 tons and 448,589 tons in 1922 and 1921 respectively. The total apparent consumption in the United States of refined primary lead in 1923 is given as 573,729 tons as compared with 492,705 tons and 444,872 tons in the two previous years respectively. The total quantity of primary lead smelted or refined in the United States in 1923 was 629,073 tons of which 567,773 tons was from domestic ores.

## Imports of Spiegeleisen

Imports of spiegeleisen into the United States in 1923 were 4669 gross tons, according to data furnished by the Department of Commerce. In January, this year, 130 tons was received and in February, 110 tons.

The members of the Electric Hoist Manufacturers' Association report a decrease of 5.69 per cent in the number of hoists ordered and a decrease of 17.095 per cent in the value of hoists ordered during March as compared with February. Shipments during March increased 2.762 per cent over February.

## PERSONAL

William Trimmer, a director in the well-known sheet company, John Lysaght, Ltd., with plants at Bristol and Newport, England, and also a director in Joseph Sankey & Sons, Ltd., which has sheet mills at Bilston, England, is now in the United States on a business trip.

A number of American metallurgists and members of iron and steel works staffs are proposed for membership in the Iron and Steel Institute, and the following names will come before the annual meeting to be held in London, May 8 and 9: James Aitken, Manufacturers' Foundry Co., Waterbury, Conn.; Harry Blumberg, Chicago; D. S. Clements, American Sheet & Tin Plate Co., Pittsburgh; Waldemar Dyrssen, United States Steel Corporation, New York; C. B. Langstroth, Milwaukee, Wis.; Roger B. McMullen, Jr., Evanston, Ill.; M. J. Reginald Morris, Massillon, Ohio; George L. Norris, Vanadium Corporation of America, New York; Frank R. Palmer, Reading, Pa.; Robert B. Schenck, Flint, Mich.; Howard Scott, Bureau of Standards, Washington; Kasper de Nyssen Wermecke, Carnegie Steel Co., Clairton, Pa.

Ambrose Swazey will be given the John Fritz gold medal for 1924 in the auditorium of the Engineering Societies Building on the evening of April 23. Charles F. Rand will preside. Prof. W. W. Campbell, University of California, and Gen. William Crozier will make addresses.

John H. Wynne, for some years identified with the General Equipment Co., which does a business in marketing second hand railroad material, and, prior to that connection, in charge of manufacturing at the Montreal and other plants of the American Locomotive Co., has been made manager at Lima, Ohio, of the Lima Locomotive Works.

W. J. Rattle, consulting mining engineer, Cleveland, is now associated with L. B. Miller, National City Bank Building, that city, in the sale of Lake Superior iron ore.

Tom Moore, for many years purchasing agent of the Virginian Railway Co., Norfolk, Va., has resigned and D. M. King has been appointed his successor.

John M. Davis, president Manning, Maxwell & Moore, New York, has been elected a director of the Coal & Iron National Bank of New York.

H. H. Valiquet, for the past 18 years chief engineer of the B. F. Sturtevant Co. (Chicago division) will join the organization of the Kirk & Blum Mfg. Co., Cincinnati. As chief engineer in his new connection he will specialize in designing dust collecting and pneumatic conveying systems, drying, heating, ventilating, cooling and fume removal systems and air conditioning systems.

Frank B. Gilbreth, consulting engineer specializing in management, Montclair, N. J., has been made a member of the Masaryk Academy of Work of Czechoslovakia as a mark of recognition of his contributions to scientific management.

J. Arthur Deakin, who was formerly associated with H. W. Ward & Co., Birmingham, England, as representative in this country, will represent the Universal Boring Machine Co., Hudson, Mass., in New York with headquarters at 150 Nassau Street. After leaving the Birmingham firm, Mr. Deakin became associated with Isbeque, Todd & Co., Brussels, which discontinued its New York office last April.

Joseph Utz, for the past seven years associated with the Federal Machinery Sales Co., Chicago, and for 24 years prior to that with the Marshall & Huschart Machinery Co., Chicago, has joined the sales force of the Stocker-Rumely-Wachs Co., Chicago.

H. A. Meyers, formerly with the Millholland

Machine Co., Indianapolis, has joined the sales force of the Dale Machinery Co., Chicago.

Howard Jackson of the Brown & Sharpe Mfg. Co., Providence, R. I., has been appointed district manager at Chicago, succeeding George M. Pearse, resigned.

F. B. Lounsberry has resigned as vice-president, works manager and also as a director of the Hunter Crucible Steel Co., Cleveland. He has made no definite plans for the future.

M. H. Hallenbeck, formerly sales engineer in paper mill and rubber mill work for the Westinghouse Electric & Mfg. Co., at Boston, has become district manager for the Allen-Bradley Co., Milwaukee. He was graduated in 1906 from Pratt Institute as electrical engineer and has spent several years with the Westinghouse organization at East Pittsburgh, New York, Buffalo and Boston.

Walter P. Maguire, managing partner of Watt & Co., Philadelphia, has returned from a trip abroad. His time was divided between London and North Africa, where he made a complete inspection of the mines represented in this country by his firm.

R. E. J. Summers, assistant engineer for the H. K. Ferguson Co., industrial engineer, Cleveland, has been promoted to chief engineer in charge of the company's technical work. He left for Japan where he will be located for the next three months.

B. D. Quarrie, general manager of the Otis Steel Co., was elected second vice-president of the Cleveland Chamber of Commerce at the annual meeting held April 9. Among directors elected on the previous day were Mr. Quarrie; S. E. Bool, Pickands, Mather & Co.; Herman A. Rock, president Van Dorn Iron Works Co.; George E. Merryweather, president Motch & Merryweather Machinery Co., and Edward S. Jordon, president Jordon Motor Co.

Blake D. Hay, manager of the Chicago branch for the Williams Tool Corporation, Erie, Pa., has resigned. He will be succeeded by David Maxwell, who has been located in Cleveland, as district manager.

Baltzar De Maré has opened an office in the Drexel Building, Philadelphia, as consulting metallurgist and engineer, specializing on the manufacture of steel by the acid and basic open-hearth and the electric furnace process. He is prepared to take up any problems connected with this manufacture and by advice and personal supervision to assist in overcoming defects, reducing condemnations and promoting economy. He has been made eastern representative of the Loftus open-hearth furnace, Naismith slag-zone equipment, and Superior basic brick.

D. S. Wood, Philadelphia, sales manager for the Niles-Bement-Pond Co., has been appointed Chicago district sales manager in the place of Samuel Eastman, who has been granted a leave of absence of several months.

Henry G. Massey, formerly district sales manager in New York for the Seneca Iron & Steel Co., Buffalo, will open a new Chicago office for the company at Room 462, Wrigley Building North.

For the Wilson dam hydroelectric project at Muscle Shoals the War Department of the United States has placed an order for four 32,500 kva. vertical waterwheel generators, each with direct connected exciter, with the General Electric Co. The 26,000 kw. units will comprise a part of the proposed installation of 18 units which will have a total ultimate generating capacity of approximately 444,000 kw.

The Interstate Commerce Commission has suspended until Aug. 13 tariff schedules establishing new individual and joint rates on iron and steel products between Central Freight Association and Trunk Line points. The schedules were filed to become effective on April 15. Both reductions and increases are provided in the new schedules on which hearings are to be held.



## OBITUARY

GEORGE M. CLARK, chairman of directors of the American Stove Co., Chicago, died at Evanston, Ill., April 5, aged 82 years.

FRANK ELLIOT, assistant to the general sales manager, Steel Sales Corporation, Chicago, was killed in that city, April 7, in an automobile accident. Mr. Elliot had been identified with the company nine years.

LOUIS LLOYD, president Eagle Emery & Corundum Wheel Co., Chicago, died at his home in Evanston, Ill., April 10, in his seventy-first year.

GEORGE F. WOOD, for many years a member of the engineering staff of the Nordberg Mfg. Co., Milwaukee, died April 5 of heart disease. He retired three years ago when stricken blind.

SAMUEL M. KNOX, formerly president of the New York Shipbuilding Co., Camden, N. J., died suddenly, April 8, at Wilmington, Del., where he had been called to visit his brother who is critically ill. Mr. Knox was born in Wilmington 66 years ago and spent most of his early life there. In 1903 he moved to Philadelphia to become secretary of the Shipbuilding company. Later he was elected treasurer, president, and then chairman of directors.

WILLIAM F. HOLL, president Seaboard Steel & Iron Corporation, Baltimore, died April 10 at the Hotel Belvedere, that city, aged 41 years, after several months' illness.

THOMAS M. FILLINGHAM, vice-president and chief engineer of the National Valve & Mfg. Co., Pittsburgh, died April 8, while on an inspection visit at the Farrell, Pa., works of the American Sheet & Tin Plate Co. Mr. Fillingham was 44 years old. He was apparently in good health when he left for Farrell, and it is believed death was caused by heart trouble.

## STRUCTURAL STEEL IN MARCH

**Bookings Equal to January—Monthly Average One-eighth Above Last Year**

WASHINGTON, April 15.—Sales of fabricated structural steel in March reported by 156 firms with a capacity of 232,045 tons amounted to 164,020 tons representing 71 per cent of capacity, according to the Bureau of the Census. Computed total bookings in March totaled 184,600 tons while shipments aggregated 169,000 tons or 65 per cent of capacity.

Sales in February reported by 175 firms with a capacity of 237,345 tons amounted to 173,207 tons or 73 per cent of capacity. Computed bookings amounted to 189,800 tons in February and shipments that month were 153,400 tons or 59 per cent of capacity.

The March bookings are equal to those of January and the monthly average so far in 1924, 186,300 tons, is 20,000 tons, or 12 per cent above the monthly average of 1923.

## Bookings of Steel Castings Increase in March

WASHINGTON, April 15.—Reflecting a sharp increase in orders, bookings in March by 65 companies, representing more than two-thirds of the commercial castings capacity of the United States, amounted to 97,962 net tons, equal to 101.1 per cent of capacity, as against 70,829 tons in February, according to a statement issued today by the Bureau of the Census. Bookings of railroad specialties in March totaled 59,141 tons, or 154.4 per cent of capacity, compared with 34,901 tons in February, while bookings of miscellaneous castings in March amounted to 38,821 tons, or 66.2 per cent of capacity as against 35,928 tons in February.

## MORE PRICE CONCESSIONS

**Decline in Buying in Mahoning Valley—Competition Is Very Keen**

YOUNGSTOWN, April 15.—Two definite sets of price levels apply in the current sheet steel market, with the smaller independent makers accepting tonnage at \$2 to \$3 below the current market prices of the leading interest. Some of the larger independents are also accepting business at price concessions. There has been a definite decline in new buying, affecting pig iron and virtually all finished products, except merchant pipe and tin plate.

District producers feel, however, that the current lull will be of short duration and that with a month of favorable weather throughout the country, there will be a perceptible quickening in buying. This assumption is based on the fact that steel consumption is going forward at a high rate and that stocks of jobbing interests and manufacturing consumers are running low.

Naturally there is keen competition for what business is now being placed. The second quarter promises to be much less active than the first quarter, which began to show weakening tendencies about the middle of the period.

### The Automobile Situation

Two district producers of sheets and one strip steel maker have been adversely affected by the automobile situation and have been obliged, in view of suspended business from this source, to curtail production substantially.

Freight traffic movement in this district reflects the lowered activity of the iron and steel industry. The Ohio Region of the Erie Railroad, for instance, reports an average per diem loaded car movement during the first 10 days in April of 5700 cars, comparing with a daily average in March of about 6000, and 6900 a year ago at this time. Lake coal is slow in starting this year, though the movement was well under way last year at this time. There is comparatively little industrial coal buying, and movement to this district is off.

Movement of finished steel products is only fair, and does not compare in any respect with the volume of steel moving from the Valley in the peak months of 1923.

### Exodus of Workmen Begins

Manufacturers report the yearly exodus of workmen to outside forms of labor is already beginning, and expect it to be somewhat accentuated this year because of the great volume of new construction under way or being started. In view of this situation, mill managers say an average production in excess of 85 per cent would be difficult to maintain, even if business were rushing.

Producers of fireproofing building materials in this district are expanding operations and expect a larger volume of business during the next three months than they had the past three months. An important maker of metal lath at Warren reports that March was the best month in its history, from standpoint of orders.

New business in merchant sizes of steel pipe is still being maintained in considerable and satisfactory volume, most of it emanating from construction needs.

## New Non-Metallic Resistor

A new non-metallic electrical heat resisting unit for industrial and domestic use, under the trade name of Globar, has been brought out by the Wireless Resistor Co. of America, Milwaukee, Wis. It is described as consisting of mixed ingredients which are variable in character and operation, depending upon the desired characteristics of the final resistance product. The material constituting the element is in part silicon-carbide. It is molded into round bar shapes and is emphasized as mechanically strong and rigid regardless of the temperature applied. The material originated abroad. Its durability is claimed satisfactory even when operated at temperatures as high as 2400 deg. Fahr.

# Machinery Markets and News of the Works

## LARGE ORDERS ARE PLACED

### American Locomotive Co. Contracts for \$500,000 Worth of Tools

#### Otherwise Machinery Markets Are Dull and April Business Is Less Than That of March

The American Locomotive Co., New York, last week placed orders for machine tools aggregating \$500,000. There were 29 large tools and a number of small machines among its purchases, the business being the largest that has been done in the East in some months.

Representatives of Andre Citroen, the French automobile manufacturer, have been buying a large number of tools for shipment to the French plant, which will increase its capacity from 200 to 300 cars a day.

Notwithstanding curtailment in the automobile in-

dustry, a little buying has been done by the Nash Motor Co., Kenosha, Wis., and the Studebaker Corporation, South Bend, Ind. The A. O. Smith Corporation, Milwaukee, has also made moderate purchases. The Nash Motor Co. is expected to enter the market soon for machines for equipping its Racine, Wis., works, the former Mitchell plant. The Ford Motor Co. has placed orders for 23 shapers and for seven centerless grinders, the latter of its own design.

If some of the pending railroad business should develop into orders before the end of the month, April will compare favorably with March, the first half of the month having generally shown a decline from last month's business. The Southern Railway has again postponed its purchases, but orders are expected this week or next. The Chesapeake & Ohio has prepared a large list which will probably be sent out soon. The Louisville & Nashville is also expected to enter the market for tools soon.

## New York

NEW YORK, April 15.

THE largest machine-tool buying of the week, and in fact the largest purchase in the East in a good many months, was that of the American Locomotive Co., New York, which ordered tools costing fully \$500,000. Ten planers of various sizes, four rod milling machines, six 6-ft. radial drills, two cylinder boring machines, two frame slotters, three automatic spacing punches and other smaller machines were ordered. The business was divided among several companies. Unusually keen price competition developed.

Fairly large purchases of tools have been made by the New York office of Andre Citroen, the French automobile manufacturer. The Citroen plant will increase its manufacturing capacity from 200 to 300 cars a day. A number of manufacturers have received substantial orders.

The International Motor Co., Plainfield, N. J., is erecting three additions to its plant, which will call for an extensive outlay for new equipment, which probably will not be inquired for until fall.

The Lally Column Co., Calyer Street and New York Avenue, Brooklyn, manufacturer of concrete-steel columns, has plans for a two-story plant, 200 x 400 ft., at 211-49 Lombardy Street, to cost approximately \$150,000, including equipment. Magnuson & Kleinert, 52 Vanderbilt Avenue, New York, are architects. Headquarters of the company are on Erie Street, Cambridge, Mass.; John Lally is head.

The International Petroleum Co., 120 Broadway, New York, has tentative plans for the construction of a pipe line, with pumping plants, etc., in the Magdalena River district, Colombia, for the transportation of oil from wells in the interior to the coast. The project is reported to involve more than \$450,000. A. M. McQueen is vice-president.

The New York Edison Co., Irving Place and Fifteenth Street, New York, has directed its engineer, Ernest Van Norden, to prepare plans for a four-story, steam-operated electric generating plant at East Fourteenth Street and the East River, designed to be the largest station of this character ever constructed, estimated to cost \$30,000,000.

Ratholz & Golden, 311 Lenox Avenue, New York, architects, have filed plans for a four-story automobile service and repair building, 100 x 125 ft., at 151-59 West 108th Street, to cost approximately \$250,000 with equipment.

The Peerless Unit Ventilation Co., 437 West Sixteenth Street, New York, manufacturer of ventilating equipment, has leased a factory now nearing completion at Skillman Avenue and Hu'st Street, Long Island City, for 10 years, and will establish a plant.

The Board of Education, Albany, N. Y., plans for the installation of manual training equipment in the proposed two new junior high schools, estimated to cost \$1,000,000. Dr. C. Edward Jones, City Hall, is superintendent of schools.

Bids will soon be asked for the erection of an electrical

repair shop at the Coney Island Yards of the Municipal Rapid Transit System, estimated to cost \$500,000, with machinery, forming the first unit of an extensive repair works at this location. The Rapid Transit Commission, George McAneny, Chairman, 49 Lafayette Street, New York, is in charge.

The Honolulu Iron Works Co., 233 Broadway, New York, has taken a contract for the construction of a new sugar mill for the Central Sugar Co., in Cuba, to cost approximately \$2,000,000, with machinery. It will be equipped for a daily grinding capacity of 3800 tons of cane, and will include a power house and machine shop.

R. Hoe & Co., 504 Grand Street, New York, manufacturer of printing presses, has purchased the plant and business of the Hall Printing Press Co., Dunnellen, N. J., comprising a tract of 16 acres of land with existing buildings of about 110,000 sq. ft. floor area. The new owner will make extensions and improvements for considerable increase in output both in the line of Hoe presses and Hall lithographic and offset machinery. It is said that the company may later move its New York plant to this location. Phillip W. Hall, heretofore head of the Hall company, will continue as works manager, while Marvin D. Hall and Phillip W. Hall, Jr., will also continue connection with the plant. The Hoe company has begun the construction of additions to its English works on Borough Road, London, and has purchased existing factory property in this same section to be remodeled for production. It is expected to double approximately the capacity of the present plant.

John A. Williamson, Berlin, N. J., township clerk, will take bids until April 21, for equipment for the municipal waterworks, including a quantity of special castings, valves, cast iron pipe, standpipe, etc., as per plans and specifications at the office of William H. Boardman, 426 Walnut Street, Philadelphia, engineer.

The Jersey Central Power & Light Corporation, Summit, N. J., is disposing of a preferred stock issue of \$1,250,000, a portion of the proceeds to be used for the purchase of additional properties, and for proposed extension and improvements in present plants and system, including completion of a steam-operated electric generating plant, now in course of construction, to be equipped for a capacity of 16,000 hp. T. R. Crumley is vice-president.

The Emko Radio Mfg. Co., Newark, N. J., has leased a floor in the building at 97 Springfield Avenue, for the establishment of a new plant.

The Public Service Corporation, Public Service Terminal, Newark, N. J., is said to have concluded negotiations with the Day-Elder Motors Corporation, 20 Colt Street, for the purchase of its Newark plant, comprising a three-story building with about 80,000 sq. ft. of floor area, adjoining the works of its subsidiary, the Public Service Production Co. The new owner purposes to use the works for repair and parts work for its motor buses, as well as the manufacture of bus bodies at a later date. The Day-Elder company specializes in the manufacture of motor trucks, and plans for the erection of a new and larger plant on site



to be selected in this same district. Fred G. Elder is vice-president of the Day-Elder company.

Thomas L. Raymond, director of the Department of Public Works, City Hall, Newark, N. J., will take bids until April 21, for a quantity of miscellaneous tools, as per specifications on file at the office of the Bureau of Purchases, Room 309, City Hall.

The Newark Pattern Works, 39 Avenue L, Newark, N. J., has filed plans for an addition to its plant for the manufacture of metal and wood patterns, to cost \$30,000 with equipment.

Manual training equipment will be installed in the two-story high school addition to be erected at Mount Kisco, N. Y., estimated to cost \$200,000. Plans are being prepared by Ernest Sidley, Bluff Road, Palisades, N. J.

The Severin-Tripp Machinery Co., 25 Church Street, New York, is in the market for a 42-in. end drive, car-wheel lathe; also a 60 in. x 18 ft. lathe.

The William H. Nicholls Co., Inc., 2-10 College Place, Brooklyn, is in the market for a 54-in. New Era type Bullard and a 24-in shaft lathe; also a Niles or Betts, 10-ft. vertical boring mill.

Manual training and vocational departments will be installed in a new high school to be erected at Ripley, N. Y., estimated to cost \$50,000 by the Union Free School District No. 3, and on which bids are being received on a general contract until April 25. Oliver B. Johnson, 610 Fenton Building, Jamestown, N. Y., is architect.

#### Export Opportunities

The Port Commission of Montevideo is inviting bids for the supply of an electric winch and two electric capstans. Complete specifications in Spanish are on file at the New York District Office of the Bureau of Foreign and Domestic Commerce, 734 Customhouse, New York City, and are available for examination by accredited American firms. The bids will be opened on June 17, 1924.

The Victorian Railways of Australia are asking for bids for the supply of drop forging equipment to include a drop hammer battery, complete stamps, and all necessary accessories, but excluding anvil blocks and structural supports. Tender forms, specifications, and blue prints are on file at the Chicago District Office of the Bureau of Foreign and Domestic Commerce, Room 830, West Monroe Street, and at the New York District Office, 734 Customhouse, for examination by prospective bidders. Tenders close at Melbourne on May 21, 1924.

A representative of a branch of the Chamber of Commerce at Saloniki, Greece, has requested catalogs from American firms dealing in construction machinery and equipment. Vice-Consul Howard A. Bowman states that a considerable amount of building and construction work is going on at the present time and that a demand for American construction machinery will develop. Catalogs and all concerning letters should be addressed: "To the American Consul, Saloniki, Greece, Reference No. 424."

### St. Louis

St. Louis, April 14.

Bids have been asked on a general contract by the Ford Motor Co., Highland Park, Detroit, for a two-story addition to its assembling works at 900 West Main Street, Oklahoma City, Okla., 125 x 133 ft., to cost about \$200,000, including equipment.

J. H. Maxwell, 19 East Archer Street, Tulsa, Okla., has awarded a contract to G. D. Morrow & Son, Kennedy Building, for the erection of a one-story and basement forge and blacksmithing shop, 50 x 140 ft., near the line of the Boston & Frisco Railroad, to cost about \$45,000, with equipment.

The Wind Engine & Pump Co., Batavia, Ill., manufacturer of pumps, windmills, etc., is considering the establishment of a factory branch at Kansas City, Mo. It is proposed to lease an existing building and remodel.

The Great Western Mfg. Co., Leavenworth, Kan., manufacturer of flour-milling machinery, etc., has tentative plans under advisement for the rebuilding of the portion of its plant recently destroyed by fire April 3 with loss approximating \$150,000.

Manual training equipment will be installed in the three-story and basement high school to be erected at Parsons, Kan., estimated to cost \$500,000. Thomas W. Williamson & Co., Central National Bank Building, Topeka, Kan., are architects.

The Tulsa Oxy-Hydro Co., Tulsa, Okla., manufacturer of commercial oxygen, carbide and acetylene apparatus, generating equipment, etc., has tentative plans for the establishment of a branch plant at Springfield, Mo., estimated to cost \$50,000. Willard Foster is president.

Manual training equipment will be installed in the two-story junior high school to be erected at Oklahoma City, Okla., estimated to cost \$350,000. Layton, Smythe & Forsythe, Oklahoma City, are architects.

W. N. Matthews & Brothers, Inc., St. Louis, manufacturer of electric line equipment, electric fittings, etc., has taken over the former plant of the Davis Boring Tool Co., Forest Park Boulevard and Spring Avenue, and has removed its plant heretofore located at 2922 Easton Avenue, to this location. Additional equipment will be installed.

The Rule Jayton Cotton Oil Co., Stamford, Tex., is in the market for a second-hand Corliss engine, 17 x 34 x 48 in., cross compound condensing.

### Philadelphia

PHILADELPHIA, April 14.

The H. O. Wilbur & Sons Co., 233-35 North Third Street, Philadelphia, has filed plans for a one-story power house at its chocolate and confectionery plant, for which a general contract has been awarded to the Turner Construction Co., 1713 Sansom Street.

Officials of the Hoopes & Townsend Co., Broad and Buttonwood Streets, Philadelphia, manufacturer of rivets, bolts, etc., have organized the Hoopes & Townsend Steel Co., to take over and expand the former company. Plans are under way for extensions in affiliated lines of production, to include the acquisition of property in the Fort Washington section. To provide for the expansion, a bond issue of \$750,000 is being sold. Clement R. Hoopes and Barton Hoopes, Jr., will continue with the new organization.

The Western Electric Co., 195 Broadway, New York, manufacturer of telephone instruments and equipment, has leased a new seven-story building, totaling 175,000 sq. ft., to be erected by the Allegheny Avenue Realty Corporation, Philadelphia, at Allegheny Avenue, Clearfield, B and Ormes Streets, to cost \$900,000. It is purposed to remove the present works at Eleventh and York Streets, to the new location, with the installation of considerable machinery for increased capacity. The property being vacated will be placed on the market. The rental for the new building aggregates \$1,750,000 for the term of lease.

The Quaker Industrial Alcohol Co., Bartram Avenue and Eighty-second Street, Philadelphia, will begin the erection of a power house at its plant.

The Willys-Overland Co., Toledo, Ohio, is beginning operations at its new plant at West Philadelphia, and will develop a capacity for assembling 100 cars per day at an early date. This will be increased in the near future with additional facilities to an output of 200 cars daily.

A power house and machine shop will be constructed by the Viscose Co., Marcus Hook, Pa., at its proposed artificial silk plant on property just acquired at Tacony and Shelmire Streets, Philadelphia, estimated to cost about \$500,000.

The Philadelphia Electric Co., Tenth and Chestnut Streets, Philadelphia, has awarded a general contract to Franklin M. Harris & Co., 1520 Parrish Street, for construction of an addition to its electrical and mechanical maintenance and repair shops, Twenty-sixth and Christian Streets, to cost \$100,000, with equipment.

The Thomas Maddock's Sons' Co., Perry and Ewing Streets, Trenton, N. J., manufacturer of sanitary ware, has asked bids on a general contract for the erection of the initial units of its proposed plant on site lately acquired in Hamilton Township, near Trenton, to cost more than \$400,000, with equipment. A power house will be included. W. E. S. Dyer, Land Title Building, Philadelphia, is engineer. A. M. Maddock is president.

The Carpenter Steel Co., River Road and Exeter Street, Reading, Pa., has plans in preparation for a one-story addition, 150 x 400 ft., to cost approximately \$180,000, with equipment. F. H. Muhlenberg, Ganster Building, is architect.

The Donaldson Iron Co., Emaus, Pa., is planning for the erection of a one-story machine shop on Broad Street.

The Eastern Co., Woolworth Building, Lancaster, Pa., is in the market for a caterpillar engine, about  $\frac{1}{2}$ -yd. capacity, Erie type.

The H-K Radio Engineering Co., Allentown, Pa., recently organized, will operate a plant at 1319 Russell Street, for the manufacture of radio sets and equipment. A. J. D. Haines and Kenneth K. Keck head the company.

The Vulcanized Rubber Co., 251 Fourth Avenue, New York, has plans in preparation for the erection of a first unit of a new plant at Morrisville, Pa., to be 47 x 135 ft., estimated to cost \$85,000. Other units will be constructed later.

The Pennsylvania Power & Light Corporation, Allentown,

### The Crane Market

A FAIR volume of inquiry for both electric overhead and locomotive cranes is being quoted on, but the number of orders is small. However, as current inquiry continues to increase, it is generally expected that there will be some buying before long. The tentative inquiry of the Foundation Co., 120 Liberty Street, New York, for cranes to be installed for the Southern Railway at Knoxville, Tenn., has been slightly revised and now calls for a 10-ton, 68-ft. span standard overhead crane, a 5-ton and 10-ton radial cranes on the same runway and two 1½-cu. yd. bucket cranes. The Central of Georgia Railroad, Atlanta, Ga., has closed on two 75-ton trolleys. The Frick Co., Waynesboro, Pa., is in the market for a 5-ton to 7-ton electric traveling crane, 80-ft. span and about 40-ft. lift with runway.

Among recent purchases are:

Lynchburg Foundry & Machine Co., Lynchburg, Va., a

small electric jib crane, from Pawling & Harnischfeger Co.

Cape May Sand Co., Cape May, N. J., a 20-ton locomotive crane from the Ohio Locomotive Crane Co.

M. A. Hanna Co., Cleveland, a 20-ton locomotive crane for use at the Hanna Furnace Co. Detroit plant, from the Industrial Works.

George A. Fuller Co., New York, a used 15-ton Brown-hoist locomotive crane from the Hoisting Machinery Co., 50 Church Street, New York.

The New York Central & Hudson River Railroad, a 10-ton and a 20-ton gantry cranes for Pier 6 of the West Shore Railroad, from Heyl & Patterson.

Ford Motor Co., Detroit, eleven 10-ton, 85-ft. span overhead cranes for a new steel plant, from the Morgan Engineering Co.

#### Bair-Collins Co., Roundup, Mont.

(Equipment wanted for mine blacksmith repair shop.)

One grinder stand.

One power hack saw.

One punch and shear.

One power circular rip saw.

One power cross-cut saw.

One 50-lb. motor driven hammer.

The United States Lock Corporation, 413 North Carpenter Street, Chicago, recently incorporated, has contracted with the Acme Industrial Co. of the same address for the manufacture of its product, a safety bolt lever designed to replace the combination on safes. Officers are George W. FitzGerald, president and general manager; M. R. FitzGerald, vice-president; and Francis McCahill, secretary and treasurer.

The Roth Mfg. Co., maker of brass and iron specialties, 1600 South Kilbourn Avenue, Chicago, has awarded contracts for a one-story factory addition, 80 x 170 ft., to cost \$30,000.

John Baptiste Fischer, 140 South Dearborn Street, Chicago, will prepare plans for a one-story 3000-hp. power plant of reinforced concrete and steel construction, West Twenty-first and Spring Streets, for the Western Shade Cloth Co., to cost \$500,000.

Emmett Maloy and E. L. Patton have formed a partnership in the electric welding and automobile repair business under the name of Maloy & Patton at Shenandoah, Iowa.

A. T. Klemens has opened an oxy-acetylene welding shop at 804 Central Avenue, Great Falls, Mont.

The Chicago, Burlington & Quincy plans to erect a large steel car repair shop at Galesburg, Ill.

The Thomas E. Tolleson foundry, 1128 Buchanan Street, Rockford, Ill., was recently damaged by fire.

The Lubac Corporation, manufacturer of anti-knock lubricant, has purchased a 121,000-sq. ft. plant site, running from Seventy-third to Seventy-fifth Street on Woodlawn Avenue, Chicago. The property embraces ten buildings with 42,000 sq. ft. of floor space and 50,000 sq. ft. of vacant land to be improved. The building program up to December, 1926, provides for construction and equipment to cost \$100,000.

Work has been started on the erection of a boiler house back of DeSales Heights Sisters of Visitation, on Alta Vista Street, Dubuque, Iowa, to cost \$25,000.

The Consumers Power Co. will erect a large addition to its steam power plant at Grand Rapids, Mich., to cost \$1,816,000.

The Ford Motor Co. plans to double the size of its assembly plant at Hegewisch, Ill. The present plant was opened in January and is running three shifts of men with a force of between 3000 and 3500.

The Chicago Bridge & Iron Works plans the construction of an addition to its fabricating shop, 100 x 600 ft., between 105th and 107th Street and South Throop Street and the Rock Island tracks, Chicago.

James B. Clow & Sons, 534-46 South Franklin Street, Chicago, manufacturer of pipe, plumbing equipment, etc., is having plans drawn for a four-story and basement plant, 115 x 200 ft., at Lake and Talman Streets, to cost about \$500,000 with equipment. The Leonard Construction Co., 37 South Wabash Avenue, is architect and contractor.

The Minneapolis & St. Louis Railroad Co., Transportation Building, Minneapolis, Minn., is planning for extensions and improvements in its locomotive repair shops and engine house at Oskaloosa, Iowa, estimated to cost \$45,000.

The City Council, Owatonna, Minn., will take bids early in May for the construction of its proposed municipal electric light and power plant, estimated to cost \$350,000, for which

Pa., is arranging for a sale of preferred stock to total \$2,000,000, a portion of the proceeds to be used for extensions and improvements. Plans are under way for the construction of a hydroelectric generating plant.

F. M. Waring, Tyrone, Pa., and associates, have secured a preliminary permit from the Federal Power Commission for the construction of a power dam and hydroelectric generating plant on the Susquehanna River, on site between Clark's Ferry and Millersburg, Pa., to cost in excess of \$1,000,000.

Manual training and vocational departments will be installed in the new high school to be erected at Reading, Pa., to cost \$778,550. General contract has just been awarded to Michael Melody & Son Co., Philadelphia.

### Chicago

CHICAGO, April 14.

BUSINESS presents an uneven appearance, some dealers having booked an encouraging aggregate of orders, while others have made few sales. Notwithstanding the recent reaction in the automotive industry, the Nash Motor Co., Kenosha, Wis., continues to buy from time to time to round out its equipment, and the Studebaker Corporation, South Bend, Ind., and the A. O. Smith Corporation, Milwaukee, have also made moderate purchases. Among the most recent orders placed by the Nash company was one for a small turret lathe. This organization is also expected to enter the market for machines to equip its Racine works, the former Mitchell plant, which, it is reported, will be used for the manufacture of a light six model. The A. O. Smith Corporation has not yet taken any action on its extensive list of tool-room equipment, but has placed a number of orders for production machines, among them three special turret lathes for finishing oil pipe couplings.

There have been a number of miscellaneous orders and inquiries which indicate that the market is somewhat more active than heretofore. The Hart Oil Burner Co., Peoria, Ill., has closed for three small turret lathes. The Goss Printing Press Co., Chicago, has placed an order for a 4-spindle high speed ball bearing drill. The University of Wisconsin, Madison, Wis., has purchased a 16-in. motor-driven shaper. The Grand Rapids, Mich., school board has placed an order for a 12-in. engine lathe. The Elgin Engine Turning & Mfg. Co., Pittsfield, Ill., and the Bair-Collins Co., Roundup, Mont., have each issued small lists which are published below. A Chicago user is inquiring for a 60 x 60-in. x 20-ft. planer. The Boyle Valve Co., Chicago, contemplates the purchase of additional grinding equipment for the manufacture of valve stems for the automobile trade. No railroad buying is reported, but the Santa Fe has added to its pending list an inquiry for a 36-in. motor-driven draw cut shaper with one rotating head and with six tool holders. The New York Central has entered the market for a 25-in. upright drill and a double end punch and shear.

Elgin Engine Turning & Mfg. Co., Pittsfield, Ill.

One 16-in. back-gear shaper.

One No. 2 Brown & Sharpe, or equivalent, surface grinder.

One No. 2 universal milling machine.

One die filing machine.

One 100-lb. automatic drop hammer.



plans have been prepared by Arthur L. Mullergren, Kansas City, Mo., engineer.

The Iowa Electric Co., Cedar Rapids, Iowa, plans to begin work early in June on proposed extensions and improvements in its generating plant at Fairfield, Iowa, estimated to cost \$220,000, including additional machinery. Col. William G. Dows is president.

The Ball-Stewart Mfg. Co., Clinton, Iowa, manufacturer of poultry-feeding equipment, has tentative plans under way for the erection of a new plant to cost about \$30,000, including machinery, on site selected on Fourth Street.

The Delta Star Electric Co., 2433 Fulton Street, Chicago, manufacturer of electric switches, etc., is taking bids for a one-story addition to cost about \$30,000 including equipment. H. A. Young is president.

The Art Crafts Products Co., Chicago, has acquired through a bond holders' committee the plant of the defunct Marvel Tire Co., De Kalb, Ill., for \$38,000. The company is installing machinery in the recently acquired building and plans to utilize the same for manufacturing purposes.

## New England

Boston, April 14.

**S**ALES of machine tools in this district continue few and far between, with used equipment having something of an edge on new. Prospective business also appears to be shrinking. Sentiment in machine tool circles is not as pessimistic as might be expected, however. Unmistakable signs are at hand that the low point in the New England textile depression has passed, and that a slow yet gradual improvement in mill activities may be anticipated. Machine shops in both cotton and woolen mills are in need of equipment and it is believed they will resume machine tool buying before long. In addition, some of the New England railroads presumably will close on equipment within the immediate future.

A rather unusual sale, a celluloid planer costing \$6,000 to \$7,000, to a Leominster, Mass. plant, is reported. Of the limited number of used tools sold the past week a 36-in. drill to a Connecticut plant and two Henry & Wright up-right drills to a local shop are the most important. A local firm of engineers will, it is reported, shortly close on a fairly large list of general shop tools for a Toledo glass plant. The Whiting Corporation is the low bidder on a hand crane required by Springfield, Mass. The Bangor & Aroostook Railroad's inquiry for a 30-ton crane is rather indefinite due to the fact that the appropriation for it has not been made.

The New England Fuel & Transportation Co., a subsidiary of the Massachusetts Gas Co., Boston, has awarded a contract for the erection of a coal pocket and trestle to serve storage facilities. The company's engineers are in charge of the work.

The Charles T. Mann Co., 200 Devonshire Street, Boston, engineers, closed bids last week on a proposed power plant for the Newickawnick Co., South Berwick, Me.

Lockwood, Greene & Co., 24 Federal Street, Boston, engineers, last week took bids and will shortly award a contract for the erection of a plant, three-story and basement, 50 x 95 ft., for the General Radio Co., 11 Windsor Street, Cambridge, Mass.

Bids close April 23, on a junior high school, Marcia C. Browne School, on Broadway, Malden, Mass., to contain manual training departments and to cost \$350,000. John C. Kimball is mayor of Malden. M. A. Dyer, 1 Beacon Street, Boston, is architect.

The Snell Mfg. Co., Fiskdale, Mass., tools, is remodeling its forge shop to provide for machine shop and bit department expansion. A one-story addition is being made.

The George F. Wright Steel & Wire Co., Stafford Street, Worcester, Mass., has awarded a contract for alterations to plant.

The William J. Collins Foundry Co., Milford, Mass., has construction in progress on a one-story foundry, 56 x 60 ft., with extension, 15 x 30 ft.

The Y-D Service Garage, Inc., 341 Newbury Street, Boston, is considering plans for a new service and repair building at 18-20 Deerfield Street, with capacity of over 200 cars, estimated to cost \$100,000. J. S. Corbiere is president.

The Stanley Rule & Level Co., Elm Street, New Britain, Conn., has filed plans for a three-story addition, 60 x 90 ft., estimated to cost \$50,000.

Charles D. Harrington, president of the Harrington Cutlery Co., Southbridge, Mass., has disposed of a large portion of his interest in the company and the management will be

transferred to the purchasers. Increased operations are planned.

The Edison Electric Illuminating Co., 39 Boylston Street, Boston, has filed plans for the erection of additions to the machine department at its electric power station, 3 Head Place, to cost approximately \$135,000. Other extensions and improvements will be made to cost about \$70,000.

The Cave Welding Co., Springfield, Mass., manufacturer of boilers, tanks, etc., with general welding works, has begun the removal of its plant on Taylor Street to a building at 453 Worthington Street, where the capacity will be increased about 50 per cent. Additional equipment will be installed.

The Eastern Connecticut Power Co., Norwich, Conn., is negotiating with the city for the purchase of the municipal electric light and power plant.

The Board of Education, Pawtucket, R. I., plans for the installation of manual training equipment in the proposed senior high school to be erected on Front Street, estimated to cost \$225,000. Robert C. N. Monahan, Pawtucket, is architect.

The Manchester Traction, Light & Power Co., Manchester, N. H., will make extensions and improvements in its hydro-electric power plants at Garvin's Falls, Merrimack River, and Kelly's Falls, Piscataquog River, including the installation of additional turbo-generators and auxiliary equipment. Stone & Webster, 141 Milk Street, engineers, are in charge.

The Waterbury Buckle Co., 372 Main Street, Waterbury, Conn., manufacturer of metal specialties, is considering the erection of a five-story addition.

The Narragansett Electric Co., Providence, R. I., has disposed of a new stock issue of \$3,264,000, a portion of the proceeds to be used for extensions and improvements in power plants and system.

## Cincinnati

CINCINNATI, April 14.

**S**OME machine tool manufacturers report improved business during the first two weeks of April. Undoubtedly there has been a little more buying during the past week, and it is believed that more orders will be booked this month than in March, as it is expected that several large railroad lists now out will be closed. One of the largest orders for shapers reported since the war was booked by a Cincinnati manufacturer this week, the order being for 23 machines from the Ford Motor Co. The Ford company also placed an order for seven centerless grinders of its own design, besides buying several other pieces of equipment. Used machinery dealers report orders more plentiful, but good used tools are becoming scarcer. Inquiries still continue heavy, the Cincinnati, Indiana & Western Railroad having issued an inquiry for four machines. It is reported that the Louisville & Nashville and Chesapeake & Ohio railroads will shortly enter the market for a large number of tools, and a list is expected from the Lunkenheimer Co., Cincinnati, for equipment for its new machine shop, contract for which was let last week.

The Steel Products Engineering Co., Springfield, Ohio, which recently took an order for 500 airplane motors for the United States Government, is now in production, turning out three motors a day. This company, which last year purchased the Averbeck Shaper Co., Covington, Ky., will add 28 and 32-in. shapers to its line. The company is running overtime on special machinery, in addition to its regular line of shapers and airplane parts.

Extensive additions to the plant of the Buckeye Steel Castings Co., Columbus, Ohio, are contemplated, including extensions to the core and pattern departments, contracts for which have been let. It is expected to have the extensions completed this year. The company is operating heavily at the present time, and construction work will be carried on so as to interfere as little as possible with production. The company makes a specialty of railroad work, and has enough business booked to maintain present operations for several months.

The Columbus Bolt Works, Columbus, Ohio, manufacturer of bolts and drop forgings, has awarded contract for the erection of a new forging plant and office building adjoining its present plant. The company has been operating at capacity, and more room is required in its forging plant to properly care for its trade. It is expected that operations will be commenced in the new plant this fall. J. D. Poste is president.

Consolidation of the Yost Gearless Motor Co. and the Superior Spring Co., Springfield, Ohio, under the name of

the Yost Superior Co., has been completed, the capitalization of the merger being \$100,000. The company's plant is located in the Shuey Building, and officials of the company are planning to double the output. B. F. Downey is secretary-treasurer of the new company.

The Weber Die, Tool & Machine Co., Middletown, Ohio, is purchasing machinery and equipment for its plant, and will engage in the manufacture of radio parts. The company, besides doing a general machine shop business, also manufactures automobile accessories. A. J. Weber is president.

The Burdett Oxygen Co., Chattanooga, Tenn., manufacturer of industrial oxygen, acetylene apparatus, etc., is perfecting plans for the erection of a new branch plant at Knoxville, Tenn., to cost in excess of \$65,000.

The Ford Motor Co., Highland Park, Detroit, has awarded a general contract to C. A. Koerner & Co., Louisville, for the erection of its proposed local assembling plant on site near the Ohio River and the State Fair Grounds. It will consist of a number of units, with power house, estimated to cost \$700,000. The contract calls for completion by Nov. 15.

The Louisville & Nashville Railroad, Louisville, is considering the construction of new locomotive repair shops, with engine house, at Leewood, Tenn., to cost about \$75,000.

The Toledo-Edison Co., Toledo, Ohio, is arranging a fund of about \$2,500,000 for extensions and betterments during the present year to increase the capacity of its local generating station, with new automatic substations and transmission lines.

The Athens Plow Co., Athens, Tenn., manufacturer of plows and other agricultural equipment, has awarded a general contract to O. W. Duggan, Athens, for the erection of a one-story foundry, 60 x 120 ft., for which foundations will be laid at once. E. L. Wilson is secretary and general manager.

The Southern Cities Power Co., Columbia, Tenn., plans for enlargements in its hydroelectric generating plant on the Duck River to increase the output about 1000 hp. Clarence Watson is superintendent.

The Newport Body Mfg. Co., Newport, Ky., manufacturer of automobile bodies, will begin the erection of a new plant on Saratoga Street to cost about \$75,000 including equipment.

N. M. Morton, Bellevue, Tenn., is in the market for complete equipment for an electric light plant.

The Central Glass Co., Bristol, Tenn., plans for the erection of a one story plant on Commonwealth Avenue for the manufacture of window plate glass and mirrors.

A branch plant for the manufacturer of briquettes will be erected at Middlesboro, Ky., at an early date by the Compressed Coal Co., Savannah, Ga.

Electrically operated pumping units are to be installed in connection with enlargements and improvements of the municipal waterworks, Cookeville, Tenn., estimated to cost \$100,000, for which the city council is in charge.

Realty, plant and equipment of the DuBois Rubber & Tube Co., Chattanooga, Tenn., representing an original investment of \$225,000, was acquired at foreclosure sale April 5 by G. H. Kaiser, Knoxville, for \$29,000. The new owner plans organization of a new company, will make repairs and improvements to the plant and reopen at an early date for the manufacture of tires and tubes.

A new plant for the manufacture of oxygen products is to be erected at Knoxville, Tenn., on a site recently acquired for the Burdett Oxygen Co., 1270 Market Street, Chattanooga, Tenn. Considerable machinery will be required. W. P. Hendricks is district manager in charge.

Planers, nailing machines, drills, wood turning lathes and other machinery and equipment will be installed in a new factory now under construction by the Kentucky Box & Crate Co., Henderson, Ky., estimated to cost \$75,000.

Extensive improvements and enlargements are contemplated at the municipal waterworks, Knoxville, Tenn., including both pumping plant, filtration plant and reservoir.

Eaton, Rhodes & Co., with head offices in Cincinnati, have been appointed exclusive agents for Kaymoor coke, foundry and furnace grades, produced by the Low Moor Iron Co., Low Moor, Va. The Kaymoor ovens, which recently were damaged by fire, have been repaired and are again producing.

The Wheeler Condenser & Engineering Co., Carteret, N. J., has acquired the business of the Alberger Pump & Condenser Co., 140 Cedar Street, New York, and will consolidate the organizations. The plant of the Alberger company at Newburgh, N. Y., will be continued in operation under the new owner as a branch of the Carteret plant.

## Pittsburgh

PITTSBURGH, April 14.

LITTLE activity is noted in machine tools in this district, aside from orders for single tools, and these are not as numerous as they were a short time ago. Slowing down in the steel industry usually tells on the demand for equipment here and the present business reaction is felt more heavily than usual because so much of the pending business is in connection with steel plant improvements. Rather good inquiry has been noted for mill type cranes, but those for standard cranes have been few and orders for both kinds have been infrequent. The Jones & Laughlin Steel Corporation will probably place the order for its new 14-in. merchant mill for Woodlawn, Pa., in a few days. This mill will have 13 stands, four edging passes and nine stands of finishing rolls. It will be electrically driven and capable of heavy production of the smaller sizes of bars, bands and small shapes, with a minimum of labor. It is to be a high-speed mill capable of running steel through as fast as 3500 ft. per minute.

Power equipment is fairly active. The Thomas Sheet Steel Co., Niles, Ohio, has bought a 1200-hp. mill motor from the General Electric Co. Gears have been ordered from the Falk Corporation and the transformers from the Packard Electric Co. The Columbia Steel & Shafting Co. has bought two 200-kw. synchronous motor generator sets, with switchboards, etc., one set for installation at its Rankin, Pa., works and the other for its Carnegie, Pa., plant, from the General Electric Co.

Contract has been awarded by the Wolverine Supply & Mfg. Co., Page and Fontella Streets, Pittsburgh, manufacturer of automatic and mechanical toys, to the H. K. Ferguson Co., 4900 Euclid Avenue, Cleveland, for a new three-story and basement plant, 80 x 160 ft., at 1218 Western Avenue, to cost approximately \$100,000 including equipment. B. F. Bain is president.

The West Penn Railways Co., West Penn Building, Pittsburgh, operating electric light and power and traction systems, is disposing of a bond issue of \$3,500,000, a portion of the proceeds to be used for extensions and betterments in plant and system. The company is affiliated with the West Penn Power Co., West Penn Building, Pittsburgh. A. M. Lynn is president.

The Transcontinental Oil Co., Benedum Trees Building, Pittsburgh, has preliminary plans for the construction of a new refining plant, to cost approximately \$750,000, on a site recently secured in northern Colorado, with capacity of about 5000 bbl. per day. The company will also make extensions and install additional equipment at its refinery at Bristow, Okla.

The International Nickel Co., Huntington, W. Va., has awarded a general contract to the McClintic-Marshall Co., Pittsburgh, for the construction of a new addition, 90 x 100 ft., for which foundations will be laid at once. It will be equipped with additional furnaces and other equipment. Headquarters of the company are at 67 Wall Street, New York. W. L. Wotherspoon is consulting engineer.

The Keystone Power Corporation, Ridgway, Pa., has secured permission to take over and consolidate 17 electric light and power companies operating in different portions of Clinton, Elk, Center and neighboring counties. Extensions and improvements are planned, including the installation of additional equipment.

The Appalachian Power Co., Bluefield, W. Va., is having plans prepared for the final unit at its local power plant, to develop a capacity of 20,000 kw. A list of equipment has been arranged, for which contracts will be placed by Viele, Blackwell & Buck, 49 Wall Street, New York, consulting engineers.

The Crane Co., 826 South Michigan Avenue, Chicago, manufacturer of valves and steam specialties, pipe, etc., has asked for bids for a one-story factory branch on Broad Street, Charleston, W. Va., 60 x 100 ft.

Manual training equipment will be installed in the proposed high school to be erected at Jackson Park, Buckhannon, W. Va., estimated to cost \$250,000. Carl Reger, Traction Building, Morgantown, W. Va., is architect.

The Penn Public Service Co., Johnstown, Pa., is perfecting a fund of about \$45,000,000 for extensions and improvements, including three hydroelectric generating plants now in course of construction on the Clarion River, known as the Piney development, to cost about \$18,000,000 with machinery; also power development for hydroelectric installations on the Youghiogheny River, Garrett County, Md., with steel tower transmission lines. The company is a subsidiary of the Pennsylvania Electric Corporation. F. T. Hepburn is president.



## Buffalo

BUFFALO, April 14.

THE market for machine tools is spotty, some dealers and makers finding it slim in business, while others report conditions fair and the outlook good. A considerable quantity of used tools will come into the market within a few days when the stock of the Herschell-Spillman Co., North Tonawanda, N. Y., is offered for sale. Knowledge that these tools were coming out may have had some effect on business this week. The Pierce-Arrow Motor Co. bought a good sized lot of machinery last week in addition to what has already been reported. Business in sheet-metal working machinery is holding up fairly well and prospects are good. A local manufacturer sold two power hacksaws in Providence and one in Detroit.

The Mitchell Spring Mfg. Co., formerly the Mitchell Spring Works, Johnstown, Pa., plans expansion, having recently been incorporated with \$350,000 capital. Fred A. Meckert, Pittsburgh, is president and general manager; Joseph W. Irwin, Pittsburgh, is vice-president and general superintendent. Offices are in the United States National Bank Building.

Austin Anderson, Randolph, N. Y., manufacturer of the Anderson milker, whose machinery and stock were recently destroyed by fire, plans the erection of a new factory.

The Iroquois Door Co., 629 Exchange Street, Buffalo, has filed plans for a \$70,000 factory.

The Greene Specialty Corporation, E. A. Greene, president, has purchased the building in Mount Morris formerly used by the Robeson Cutlery Co. for manufacture of knives. The Greene Specialty Corporation will manufacture general novelties. The corporation will probably group all of its branch plants in Mount Morris.

The National Collapsible Rim Corporation contemplates erection of plant at Mount Morris, N. Y.

The St. Lawrence Valley Power Corporation, Potsdam, N. Y., has announced plans for a hydroelectric development on the Racquette River, near Hanawa Falls. The new development will furnish about 5000 hp. The power house will probably be placed on Allen's Island.

Plans have been filed by the American Radiator Co., 1803 Elmwood Avenue, Buffalo, for a new addition to cost about \$125,000.

F. P. Hunt, 115 Pitkin Avenue, Rochester, N. Y., will begin the erection of a two-story automobile service and repair building, 90 x 150 ft., at Pitkin Avenue and Winthrop Street, to cost with equipment about \$80,000.

The Sterling Engine Co., 1250 Niagara Street, Buffalo, manufacturer of gas and gasoline engines, has plans for a one-story addition to cost approximately \$70,000 and will soon begin work.

The American Knife Co., Canal Street, Baldwinsville, N. Y., manufacturer of butchers' knives, tools, etc., has acquired a building for plant extensions. A. J. Tooley is president.

The Lennox Furnace Co., Marshalltown, Iowa, heater manufacturer, has tentative plans for the erection of an eastern branch plant at Syracuse, N. Y., to cost in excess of \$50,000 with equipment.

The New York State Gas & Electric Corporation, Ithaca, N. Y., is planning for the construction of a hydroelectric generating plant in the Adirondack Mountains, to cost with equipment about \$750,000.

The International Harvester Co., Chicago, has preliminary plans for a new addition to its Elmira, N. Y., plant estimated to cost \$85,000. S. S. Houston is local manager.

Manual training equipment will be installed in the proposed two-story high and grade school to be erected at Allegheny, N. Y., estimated to cost \$175,000.

The Penn Public Service Corporation, Johnstown, Pa., will take over the light and power properties of the Warren-Jamestown Street Railway Co., Jamestown, N. Y., and similar utilities at Warren, Pa.

The Office Toilet Supply Co., 313 Larkin Street, Buffalo, N. Y., is in the market for a stationary air compressor, with 30-gal. tank and a 60-cycle, 110-volt electric motor.

Contract has been awarded to the Constable Co., Erie, Pa., for the construction of a one-story brick and steel factory, 200 x 200 ft., for the Erie Steam Shovel Co., estimated to cost \$100,000.

The American Chain Co., in its balance sheet as of Dec. 31, 1923, shows cash on hand of \$2,559,317 as compared with \$1,046,481 at the close of 1922. The surplus item as of that date stands at \$7,929,465 against \$10,119,243 for 1922.

## Indiana

INDIANAPOLIS, April 14.

THE H. T. Electric Co., 612 North Capitol Avenue, Indianapolis, manufacturer of electrical equipment, has awarded a general contract to A. V. Stackhouse, Fletcher Trust Building, for a one-story addition to its factory, estimated to cost \$37,000.

The Marion & Bluffton Traction Co., Marion, Ind., has acquired the plant and system of the Lynngrove Light & Power Co., Lynngrove, Ind., and plans for extensions and improvements, including the installation of additional equipment.

The Thiesing Veneer Co., Harding Street and the Belt Railroad, Indianapolis, is planning for the rebuilding of the portion of its plant destroyed by fire, April 5, with loss estimated at \$18,000, including equipment.

The Ball Brothers Co., Muncie, Ind., manufacturer of corrugated containers, glass products, etc., will expend about \$250,000, for extensions and improvements in the plant of the American Strawboard Co., Noblesville, Ind., acquired at a receiver's sale several months ago.

The Hall General Repair Shop, 1027 Wabash Avenue, Terre Haute, Ind., operating an automobile machine and parts works, has plans in preparation for a two-story addition at 1108-1110 Wabash Avenue, estimated to cost \$55,000, including equipment. The Shourds-Stoner Co., Tribune Building, is architect. Ira E. Hall is head.

The Interstate Public Service Co., Indianapolis, is negotiating for the purchase of the municipal electric light and power plant at Richmond, Ind., for a consideration of \$1,500,000. Upon acquisition, the purchasing company will make extensions in this district, including the installation of additional equipment. Harry Reid is president.

The Cummings Vote Register Co., Knox, Ind., manufacturer of voting machines and parts, is reported to be planning for the erection of a new plant on property selected at Crown Point, Ind., comprising a one-story works, estimated to cost \$100,000, with equipment.

The Common Council, Bloomington, Ind., plans for the installation of electric-operated pumping equipment in connection with proposed extensions and improvements in the municipal waterworks, for which a bond issue of \$125,000 has just been sold. Ellsworth Cooper is city clerk.

## Cleveland

CLEVELAND, April 14.

MACHINE tool business continues slow, with a volume of sales less than last month. New inquiries have fallen off and no lists of any size are before the trade. Orders are limited to one or two machines. With the curtailment in the automobile industry, demand from that source has virtually disappeared. The used machinery market continues fair, there being considerable call for milling machines, radial drills and shapers and good used tools.

The Ohio Injector Co., Wadsworth, Ohio, is having plans prepared for a three-story and basement factory addition, the estimated cost of which will be \$200,000.

The East Shore Machine Products Co., 835 East 140th Street, Cleveland, is having plans prepared for a one-story factory addition. H. G. Gottschalt is president and general manager.

The Champion Hardware Co., Geneva, Ohio, is taking bids for its factory addition, which will be a three-story structure, 50 x 130 ft. Lockwood, Greene & Co., 1506 Hanna Building, Cleveland, are the architects.

The White Motor Co., Cleveland, is preparing plans for a one-story and basement saw tooth roof type factory building, 110 x 150 ft., and another two-story and basement building, 160 x 150 ft. The Watson Co., Cleveland, is the architect.

The Cleveland Electric Illuminating Co., Cleveland, is taking bids for a substation to be erected at Euclid Avenue and 165th Street. E. J. Cook is the company's engineer.

The Gilliam Mfg. Co., Canton, Ohio, manufacturer of roller bearings, contemplates the erection of a two-story and basement factory building.

The properties of the Blackburn Coal Co., defunct, located in Springfield Township, Jefferson County, Ohio, will be sold at public sale April 22 at the office of James R. Hinchliffe, receiver, 1026 Guardian Building, Cleveland. The properties include large tracts of coal lands, mining machinery, electric railways, dynamos, motors, mine cars and other coal mining machinery and equipment.

The Cleveland Keen Cut Mfg. Co., Cleveland, is building

a new one-story brick and steel factory, estimated to cost \$60,000, on Dennison Avenue.

The City Council, Steubenville, Ohio, has authorized a bond issue of \$30,000 for the purchase of new boilers and pumps for the waterworks. Plans are also under way for a \$1,000,000 bond issue for increased pumping facilities and reservoir.

Contract has been awarded to the DeHamel Construction Co., Cleveland, for the construction of a new factory, estimated to cost \$40,000, at 1549 Hamilton Avenue, Cleveland, for the Motor Repair & Mfg. Co.

The City Council, Lorain, Ohio, plans to purchase considerable machinery and equipment for the new water filtration plant.

Lathe, drill press, cylinder re boring machine and other electrically operated machinery and equipment will be installed in a service station now under construction on Erie Street, Lorain, Ohio, for the Chevrolet Garage, Inc.

## Milwaukee

MILWAUKEE, April 14.

WHILE most machine tool manufacturers are operating so far this month at a rate of capacity equal to the average since Jan. 1, it is noticeable that new business is not being booked in the same proportions as deliveries are being made. The market has developed more spotty characteristics, especially with respect to requirements of automotive industries. Railroad business is developing very slowly. The Giddings & Lewis Machine Tool Co., Fond du Lac, Wis., is maintaining capacity production of its new internal grinding machine, large orders for which have recently been taken from the Ford Motor Co., Packard Motor Car Co., the Gilliam Roller Bearing Co. of Canton, Ohio, and several other interests. Other tool builders in Wisconsin outside of Milwaukee report moderate orders, largely for highly developed production instruments rather than standard types.

The New Hudson Mfg. Co., Minneapolis, Minn., has decided to abandon its pressure and storage tank works at Deerfield, Wis., having disposed of the building and real estate, and is transferring the operation to its branch factory at Janesville, Wis., adding some equipment to increase capacity. The hay tool department, until recently maintained at Janesville, has been moved to the branch at De Pere, Wis., to make room for the tank department.

The Jenkins Machine Co., Sheboygan, Wis., during the week made the initial shipment of seven woodworking machines as part of a \$35,000 order from the Veneer Mfg. Co., of Hok-Kaido, Japan.

The Electric Products & Engineering Co., Milwaukee, has been organized to manufacture electric motors, machinery and electrical appliances. T. J. Wels, M. A. Jacoby and William H. Shackton, for several years with the Allen-Bradley Co., Milwaukee, manufacturer of electric controlling devices, are the principals. Temporary headquarters have been established on Trostel Avenue, near Pennsylvania Avenue, Milwaukee.

The Board of Education, Hiles, Wis., has engaged Wolf, Sexton & Harper, architects, 7 West Madison Street, Chicago, to design a new high school and vocational institute estimated to cost \$175,000, bids on which will be taken about May 15. Mrs. M. Miller is clerk of the board.

The Oshkosh Corrugated Box Mfg. Co., Oshkosh, Wis., has been incorporated with \$100,000 capital stock by John Orlebeke, J. P. Verhulst and John J. Doane, all of Sheboygan, Wis., to engage in the manufacture of corrugated boxes and other containers. The former plant of the Oshkosh Excelsior Mfg. Co. has been purchased and is being re-equipped. The new concern is closely identified with the National Box & Specialty Co., Sheboygan.

The Milwaukee Board of School Directors, Frank M. Harbach, secretary and business manager, is asking bids until May 1 for furnishing all materials and labor for the installation of pressure recording apparatus in the public schools of Milwaukee. The work is to be completed by Aug. 31, and bids must be accompanied by a bond of 30 per cent or check for 5 per cent.

The Prime Mfg. Co., 653 Clinton Street, Milwaukee, manufacturer of brass and bronze castings for the railroad and automotive industries, has let the general contract, for erecting a new brass foundry and machine shop, 80 x 165 ft., part two and three stories high, designed by Frank D. Chase, Inc., Chicago. The order for additional furnaces has been placed, but miscellaneous tool requirements are still in prospect. H. G. Wild is secretary and manager.

## South Atlantic States

BALTIMORE, April 14.

THE Delaware Auto Radiator Co., 1002 Tatnall Street, Wilmington, Del., has plans for a new sheet metal-working plant on French Street, near Thirteenth Street.

D. C. Elphinstone, 408 Continental Building, Baltimore, machinery dealer, is in the market for a number of dump cars, each about 20 yd. capacity.

The Southern Public Utilities Co., Winston-Salem, N. C., has preliminary plans for an automatic power substation at Thirteenth and White Streets for industrial service.

R. T. Lipscombe, 210 Tazewell Street, Norfolk, Va., agent for the Ford automobile, is planning for the erection of a seven-story automobile service and repair building on Grace Street, to cost about \$700,000, including site and equipment.

The Atlantic Coast Line Railway Co., Wilmington, N. C., J. E. Willoughby, chief engineer, has awarded a general contract to R. L. Blalock, Rocky Mount, N. C., for its proposed car repair shops at Rocky Mount, consisting of seven buildings, 100 x 320 ft., to be equipped as a coach shop; one-story cabinet shop, 50 x 200 ft.; paint shop, 100 x 320 ft.; trimming shop, 50 x 200 ft.; hoist building, 30 x 120 ft.; and two one-story structures 50 x 100 ft. and 35 x 120 ft. The cost will be about \$175,000.

The Mountain Industrial Institute, Grundy, Va., has engaged Mahood & Van Dusen, Bluefield, W. Va., architects, to prepare plans for a group of buildings at the institution, including a number of mechanical shops and central power house, for which bids will be asked in the near future. Dr. I. Hopwood is president.

The Youghiogheny Hydroelectric Corporation, operated by the Pennsylvania Electric Corporation, Johnstown, Pa., F. T. Hepburn, president, has secured permission to issue bonds and other securities in an amount of \$7,500,000, a large part of the proceeds to be used in connection with a proposed hydroelectric power plant on the Youghiogheny River, near Oakland, Md.

The Consolidated Gas, Electric Light & Power Co., Lexington Building, Baltimore, has plans for extensions and improvements in its power plant on Gould Street, to cost more than \$1,000,000, with equipment.

## Detroit

DETROIT, April 14.

THE Ford Motor Co., Highland Park, Detroit, has awarded a general contract to the Irwin & Leighton Co., 126 North Twelfth Street, Philadelphia, for the erection of two buildings at its proposed assembling plant at Jacksonville, Fla., comprising a one-story works and two-story power house, estimated to cost \$85,000. The Ford company is perfecting plans for the early erection of an addition to its River Rouge, Detroit, plant, with main unit to be 500 x 1700 ft., to cost in excess of \$1,000,000, with equipment. Property has been acquired from the City Council, Ypsilanti, Mich., for \$30,000, including rights for a power dam on the Huron River, to be used for the construction of a new plant. The company has perfected plans for additions in its Hegewisch assembling works to double the present capacity, estimated to cost \$1,750,000, including equipment.

The Consumers Power Co., Jackson, Mich., is disposing of a bond issue of \$8,500,000, a large part of the proceeds to be used for extensions and improvements in electric generating plants and system.

Manual training equipment will be installed in the proposed two-story high and grade school to be erected at Caro, Mich., estimated to cost \$230,000. Cowles & Mutscheller, Chase Building, Saginaw, Mich., are architects and engineers.

F. H. Beauvais, city manager, Royal Oak, Mich., will take bids until May 19, for equipment and construction of a sewage pumping station and disposal works, with pumping machinery of capacity of 2,000,000 gal. per day. Hoad, Decker, Shoecraft & Drury, Ann Arbor, Mich., are engineers.

The Bull Dog Wrench Co., Benton Harbor, Mich., recently organized, has taken over property in the Hinkley mill section, and will establish a new plant for the manufacture of heavy industrial wrenches. Nathan D. Simpson is president, and Otis Klett, secretary and treasurer.

The Kelsey Wheel Co., Inc., 3600 Military Avenue, Detroit, manufacturer of steel automobile wheels, is having plans drawn for a one-story addition, 100 x 145 ft., estimated to cost \$80,000. Bids will be called at an early date. Smith, Hinchman & Grylls, Marquette Building, are architects and engineers.

The Standard Service Tool Co., Detroit, recently organized, will operate a plant at 682 East Forest Avenue.



for general automobile tools and garage equipment. C. B. Waterman is president and general manager.

The Platt Co., Lansing, Mich., manufacturer of water heaters and water softeners for domestic and other service, has tentative plans under advisement for the erection of a new plant on local site.

Parker & Jenkins, Howell, Mich., have taken over the plant and business of the American Bell & Foundry Co., Northville, Mich., and plan for extensive production at the plant. The company name has been changed to the Bell Foundry & Furnace Co., capitalized at \$40,000.

The Kalamazoo Boiler Co., Kalamazoo, Mich., will discontinue the manufacture of steam engines at the local plant of the Clark Engine & Boiler Co., recently acquired, devoting the entire works to the production of steam boilers.

## Gulf States

BIRMINGHAM, April 14.

A BOND issue of \$5,000,000 is being arranged by the Alabama Power Co., Birmingham, Ala., the majority of the proceeds to be used for extensions and improvements in generating plants and system.

The American Light & Power Co., Miami Beach, Fla., recent purchaser of the plants and system of the Miami Beach Electric Co., and the Miami Beach Railway Co., is arranging a fund of about \$1,000,000, for extensions and improvements. The initial work will consist of enlargements in the local steam-operated electric generating station, to include the installation of a 5,000 kw. turbo-generator, with auxiliary equipment.

The Howard Lumber Co., Sarasota, Fla., has inquiries out for additional woodworking machinery for installation at its plant. C. J. Howard is secretary.

J. A. Goodman, Dallas, Tex., and Dr. W. M. Lang, Brownwood, Tex., have purchased the oil refining plant at the latter place, heretofore owned by the Blue Ribbon Refinery Co. The new owners will organize a company to operate the property, with Dr. Lang to act as general manager.

The Board of Port Commissioners, New Orleans, La., has arranged a fund of \$3,000,000, for proposed improvements in the municipal port property. A new wharf will be built, and improvements and extensions made in the present coal and bulk commodity mechanical handling plant. Other material-handling equipment will be installed.

John K. Spaulding, Fullerton, La., equipment dealer, is in the market for a quantity of oil-burning equipment and apparatus, suitable for use with two horizontal return tubular boilers, each 250 to 275 hp.

The Common Council, Fort Pierce, Fla., plans for the installation of electric-operated pumping machinery in connection with proposed extensions and improvements in the municipal waterworks, estimated to cost \$125,000. A bond issue is being arranged.

E. J. Bacon, mayor, Sarasota, Fla., will take bids until April 28, for equipment for a municipal electric light and power plant, including a 750 hp. Diesel oil engine, direct-connected to a 500 kw. generator, with belt-driven exciter, generator panel and auxiliary equipment; also for alternate bids on one 500 kw. generator, steam-driven either with uniflow or turbine engine, with exciter and control panels, two surface condensers, two water tube boilers and accessory apparatus, 10,000-gal. steel fuel oil tank, boiler feed pumps, water softener and radial brick stack for 2000 hp. boiler capacity. H. I. Southwick is city clerk.

Manual training equipment will be installed in the proposed junior high school to be erected at Jackson, Miss., for which an appropriation of \$250,000 is being arranged.

Electrically operated pumping and other mechanical equipment will be required in connection with municipal waterworks to be erected at Long Beach, Miss.

## Pacific Coast

SAN FRANCISCO, April 9.

NIEDRINGHAUS, INC., 2507 North Broadway, St. Louis, formerly known as the St. Louis Metalware Co., has filed articles of incorporation under California laws, to operate a Pacific Coast subsidiary. A 5-acre tract of land has been acquired at East Oakland, Cal., and plans will soon be drawn for the initial units, estimated to cost \$90,000.

Dell M. Potter, Clifton, Ariz., and associates, are perfecting plans for the construction of a hydroelectric generating plant on the Black River, to cost approximately \$500,000.

The General Furniture Co., 1400 Lane Street, Seattle,

has awarded a general contract to the Austin Co., Smith Building, for the erection of a new plant at First Avenue and Hobson Street, to be two-story, 140 x 230 ft., estimated to cost \$90,000, with machinery.

The Colby Management Corporation, Pacific Electric Building, Los Angeles, manufacturer of die-cutting machinery, tractors, vacuum cleaning equipment, etc., has awarded a general contract to the Union Iron Works, 5125 Santa Fe Avenue, for the erection of a new plant on site acquired at Monrovia, near Los Angeles, comprising a foundry, machine shop and assembling works, each one-story, 100 x 300 ft., estimated to cost \$250,000, with equipment.

The General Petroleum Corporation, Los Angeles, has secured a substantial interest in the Republic Supply Co., of the same city, manufacturer of oil well equipment and supplies. Plans are said to be under way for extensions for larger output. T. M. Pike is president, and J. A. Crawford, first vice-president and general manager.

The Pacific Gas & Electric Co., 445 Sutter Street, San Francisco, will begin the erection of a new automatic power substation on North Twentieth Street, Oakland, Cal., to cost about \$65,000.

The Fageol Motors Co., Hollywood and 107th Avenues, Oakland, Cal., will begin the erection of its proposed local plant for the manufacture of automobiles and parts, with first unit to cost approximately \$50,000. The general contract has been let to E. T. Leiter & Son, Call Building, San Francisco.

The City Council, Santa Barbara, Cal., is considering a recommendation of Herbert Nunn, city manager, for the construction and operation of a municipal hydroelectric generating plant on Lake Gibraltar, with initial development to cost \$40,000.

The Chicago, Milwaukee & St. Paul Railroad Co., Seattle, has tentative plans for the construction of a new car repair and car building shop at Tacoma, Wash., to be used primarily for freight car work. The initial unit will consist of two one-story structures, with steam power house.

The Weber Showcase & Fixture Co., 440 Seaton Street, Los Angeles, will begin the erection of a new plant at 5714 South Park Avenue, for which plans recently were completed. It will be one-story, 360 x 800 ft., estimated to cost \$350,000. Hamm & Grant, Inc., 607 Ferguson Building, is engineer.

## Canada

TORONTO, April 14.

WHILE demand for machinery and machine tools remains steady, the general tone of the market has not improved to as great an extent as local builders and dealers expected. A considerable volume of prospective business is beginning to appear and selling interests are looking forward to a stronger demand in the early future. The automotive industry continues to buy tools for replacement, and dealers are figuring on a couple of small lists on this account. Railroad buying has helped to stimulate business and dealers are looking for further buying on this account. Canadian dealers and manufacturers of machinery and equipment are not yet prepared to make any predictions as to the effect the tariff reductions on various lines of equipment will have on their business, but it is understood that several large manufacturing firms are protesting the reductions, especially is this true with regard to the agricultural implement makers.

In a newspaper dispatch from Niagara Falls, Ont., it is reported that the Carbon & Alloy Steel Co. will establish a manufacturing plant at Montrose, and that Mr. Wiles of the firm of Carlisle & Wiles of Sheffield, England, will be in charge.

E. H. Darling, engineer, 72 James Street North, Hamilton, Ont., is receiving bids until April 21 for equipment and machinery for waterworks plant to be constructed at Smith's Falls, Ont.

Port Colborne, Ont., will construct waterworks plant and system at a cost of \$78,000.

The Globe Furniture Co., Waterloo, Ont., will build foundry and machine shop there and is interested in equipment. John Bahnsen is manager.

The Kirsch Mfg. Co. of Canada, Woodstock, Ont., metal specialties, will build addition to factory. The company is interested in new equipment.

W. H. Cooper, Clyde Bldg., Hamilton, Ont., has the general contract for addition to plant of the Hoover Suction Sweeper Co., Gage Avenue North, Hamilton, to cost \$60,000.

# Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipments in carload lots from mills, these prices are given for their convenience.

On a number of items the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general heading of "Iron and Steel Markets" and "Non-Ferrous Metals."

## Bars, Shapes and Plates

Bars:	Per Lb.
Refined iron bars, base price.....	3.49c.
Swedish charcoal iron bars, base.....	7.00c.
Soft steel bars, base price.....	3.49c.
Hoops, base price.....	5.19c.
Bands, base price.....	4.39c.
Beams and channels, angles and tees, 3 in. x ¼ in. and larger, base.....	3.59c.
Channels, angles and tees under 3 in. x ¼ in., base.....	3.49c.
Steel plates, ¼ in. and heavier.....	3.59c.

## Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger.....	3.55c.
(Smooth finish, 1 to 2½ x ¼ in. and larger)...	4.05c.
Toe-calk, ½ x ¾ in. and larger.....	4.50c.
Cold-rolled strip, soft and quarter hard.....	7.50c. to 8.50c.
Open-hearth, spring steel.....	4.50c. to 7.50c.
Shafting and Screw Stock:	
Rounds.....	4.40c.
Squares, flats and hex.....	4.90c.
Standard tool steel, base price.....	15.00c.
Extra tool steel.....	18.00c.
Special tool steel.....	23.00c.
High-speed steel, 18 per cent tungsten.....	70c. to 75c.

## Sheets

Blue Annealed	Per Lb.
No. 10.....	4.34c.
No. 12.....	4.39c.
No. 14.....	4.44c.
No. 16.....	4.54c.

## Box Annealed—Black

Soft Steel	Blued Stove
C. R., One Pass	Pipe Sheet
Per Lb.	Per Lb.
Nes. 18 to 20.....	4.55c. to 4.70c.
Nos. 22 and 24.....	4.70c. to 4.85c.
No. 26.....	4.75c. to 4.90c.
No. 28*.....	4.85c. to 5.00c.
No. 30.....	5.05c. to 5.20c.

## Galvanized

	Per Lb.
No. 14.....	4.95c. to 5.10c.
No. 16.....	5.10c. to 5.25c.
Nos. 18 and 20.....	5.25c. to 5.40c.
Nos. 22 and 24.....	5.40c. to 5.55c.
No. 26.....	5.55c. to 5.70c.
No. 28*.....	5.85c. to 6.00c.
No. 30.....	6.35c. to 6.50c.

\*No. 28 and lighter, 36 in. wide, 20c. higher.

## Welded Pipe

Standard Steel	Black	Galv.	Wrought Iron	Black	Galv.
½ in. Butt...	—41	—24	½ in. Butt...	—4	+19
¾ in. Butt...	—46	—32	¾ in. Butt...	—11	+9
1-3 in. Butt...	—48	—34	1-1½ in. Butt...	—14	+6
2½-6 in. Lap...	—44	—30	2 in. Lap...	—5	+14
7-8 in. Lap...	—41	—11	2½-6 in. Lap...	—9	+9
9-12 in. Lap...	—34	—6	7-12 in. Lap...	—3	+16

## Bolts and Screws

Machine bolts, cut thread,	45 and 10 to 50 and 10 per cent off list
Carriage bolts, cut thread,	35 to 35 and 10 per cent off list
Coach screws.....	45 to 50 and 10 per cent off list
Wood screws, flat head iron,	75, 20, 10 and 7½ per cent off list

## Steel Wire

BASE PRICE* ON NO. 9 GAGE AND COARSER	Per Lb.
Bright basic.....	4.50c. to 4.75c.
Annealed soft.....	4.50c. to 4.75c.
Galvanized annealed.....	5.15c. to 5.40c.
Coppered basic.....	5.15c. to 5.40c.
Tinned soft Bessemer.....	6.15c. to 6.40c.

\*Regular extras for lighter gage.

## Brass Sheet, Rod, Tube and Wire

### BASE PRICE

High brass sheet.....	18¼c. to 19¼c.
High brass wire.....	18¼c. to 19¼c.
Brass rods.....	16 c. to 17 c.
Brass tube, brazed.....	26¼c. to 27¼c.
Brass tube, seamless.....	22½c. to 23½c.
Copper tube, seamless.....	23¼c. to 24¼c.

## Copper Sheets

Sheet copper, hot rolled, 21¼c. to 22¼c. per lb. base.  
Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.

## Tin Plates

Bright Tin	Grade	Grade	Coke—14 x 20	Prime	Seconds
	"AAA"	"A"			
	Charcoal	Charcoal			
	14x20	14x20			
IC..	\$11.75	\$9.50	80 lb..	\$6.55	\$6.30
IX..	13.25	11.50	90 lb..	6.65	6.40
IXX..	14.50	12.50	100 lb..	6.75	6.50
IXXX..	15.50	13.75	IC..	7.00	6.75
IXXXX..	16.50	14.75	IX..	8.25	8.00
			IXX..	9.50	9.25
			IXXX..	10.75	10.50
			IXXXX..	12.00	10.75

## Terne Plates

8 lb. coating, 14 x 20	
100 lb. ....	\$7.00 to \$8.00
IC.....	7.25 to 8.25
IX.....	8.25 to 8.75
Fire door stock.....	9.00 to 10.00

## Tin

Straits pig.....	58c.
Bar.....	60c. to 65c.

## Copper

Lake ingot.....	16 c.
Electrolytic.....	15¼c.
Casting.....	14¼c.

## Spelter and Sheet Zinc

Western spelter.....	8c.
Sheet zinc, No. 9 base, casks.....	10¼c. open 11¼c.

## Lead and Solder\*

American pig lead.....	9¼c. to 9½c.
Bar lead.....	14c. to 15c.
Solder ½ and ½ guaranteed.....	40c.
No. 1 solder.....	38c.
Refined solder.....	34c.

\*Prices of solder indicated by private brand vary according to composition.

## Babbitt Metal

Best grade, per lb.....	75c. to 90c.
Commercial grade, per lb.....	35c. to 50c.
Grade D, per lb.....	25c. to 35c.

## Antimony

Asiatic.....	13c. to 14c.
--------------	--------------

## Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb.....	36c.
---	------

## Old Metals

Business is quiet and dealers' buying prices are unchanged as follows:

	Cents Per Lb.
Copper, heavy crucible.....	11.25
Copper, heavy wire.....	10.75
Copper, light bottoms.....	9.00
Brass, heavy.....	6.50
Brass, light.....	5.00
Heavy machine composition.....	8.75
No. 1 yellow brass turnings.....	6.75
No. 1 red brass or composition turnings.....	8.25
Lead, heavy.....	6.25
Lead, tea.....	5.00
Zinc.....	4.00
Cast aluminum.....	16.50
Sheet aluminum.....	16.00